WIN £1200 Worth of Prizes only in the **EXPRESS SUMMER GIVE-AWAY** Page 52

Issue 93 • 18 August 1990 • 58p

NEW COMPUTER EXPRESS

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

AMIGA

- VirusX 4.1 unleashed
- 3D Professional
- Play Monty Python

ST

- New networking
- ST as a backing band
- Learn a language

PC

- An AT for £250
- PC as a TV
- Speech synthesiser

SPECTRUM

- HIFORM disk utility
- Speccy secrets

ARCHIMEDES

- Protext arrives

PLUS SPECIALIST COLUMNS FOR: CPC•C64•MSX PD•QL•BBC PCW•SAM

MEET THE C64 CONSOLE - THE GS

Full details of Commodore's £99 Game System PAGE 3

CPCs UNVEILED

Burnin' Rubber
PRESS FIRE 1 TO START
PRESS FIRE 2 FOR OPTIONS
COPYRIGHT 1990 OCEAN SOFTWARE

£99 GX4000 CONSOLE, CPC 464 PLUS AND 6128 PLUS READY FOR SEPTEMBER LAUNCH

But six months after Express first revealed full details of the new Amstrad CPC range we ask: Was it worth the wait?

NEWS REPORT PAGE 3, ANALYSIS AND REVIEW PAGES 8 & 9

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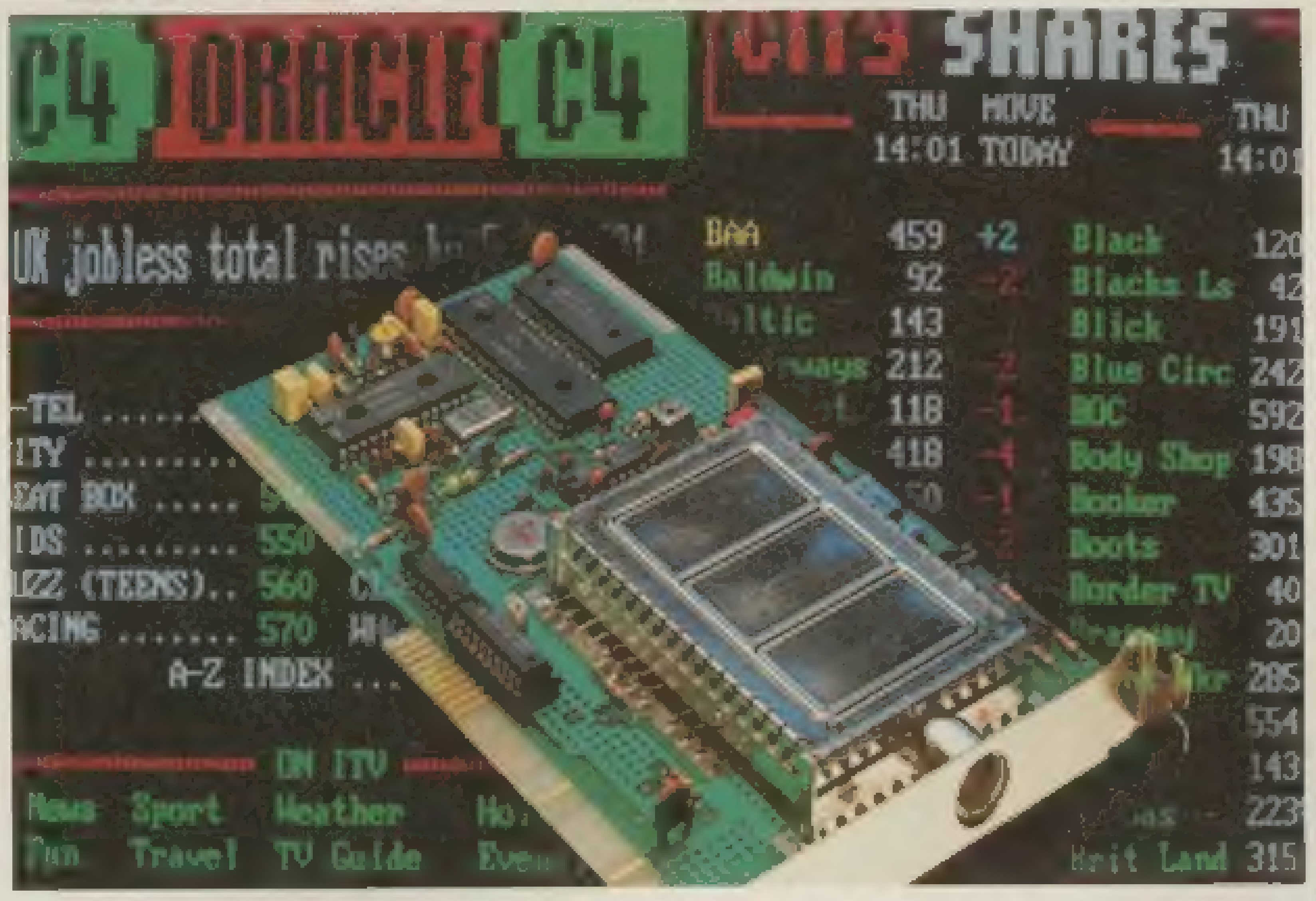


• For the latest news and financial data, page the Oracle. Or failing that turn on your PC fitted with the new Microtext teletext adapter card for PC compatibles, priced at £195 from Microtext on (0705) 595694. ■

Protestors sing in hexadecimal!

CHANT PUTS A HEX ON LOTUS

The League for Programming Freedom's protest march on Lotus in Cambridge, Massachusetts, last week (Express 92) was a good-humoured affair.

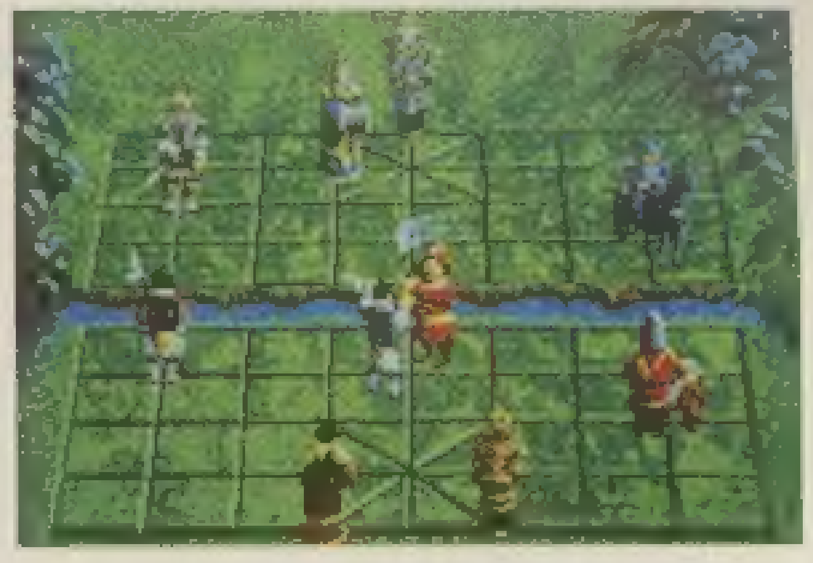
The LPF estimated the march as numbering 320 people, and once outside Lotus the marchers were treated to speeches by MIT's Patrick Winston and John Macorthy of Stanford. Following the speeches came the picket, lasting just 45 minutes until 2pm that afternoon.

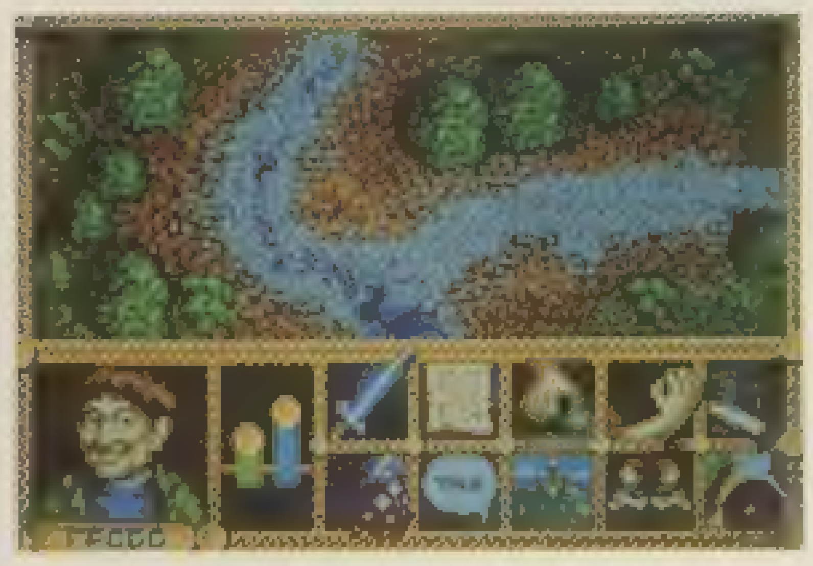
The placards were typical of the MIT sense of humour, proclaiming "Lotus says if you can't beat 'em, sue 'em" and "Drop that suit – we have you surrounded". Better still was the hex chant which the gathered programmers kept going throughout the protest. "1-2-3-4, Kick that lawsuit out the door, 5-6-7-8, Innovate don't litigate, 9-A-B-C, Interfaces should be free, D-E-F-0, Look And Feel has got to go!"

The march was in protest at Lotus' repeated and successful efforts to prosecute makers of other software on the grounds of similar 'look and feel'.

The LPF's Richard Stallman was much more serious mood when he highlighted the motives behind the march. "We don't believe that anyone has the right to own a user interface. The public invests too much time and resources in learning a user interface for anyone to claim ownership of it."

Stallman also said that a Lotus employee had joined them briefly. ■





• The upgraded version of Battle Chess (top) and Lord of the Rings makes it to the PC, courtesy of Electronic Arts.

Sequels from EA

Electronic Arts has announced PC and Amiga versions of its *Bard's Tale III: Thief Of Fate* graphic adventure game, and new PC games *Battle Chess II* and *Lord Of The Rings*.

Bard's Tale III is a role-playing adventure following the fortunes of an adventurer, while *Battle Chess II* is subtitled Chinese Chess, and is an exotic game based on last year's chart-topping program.

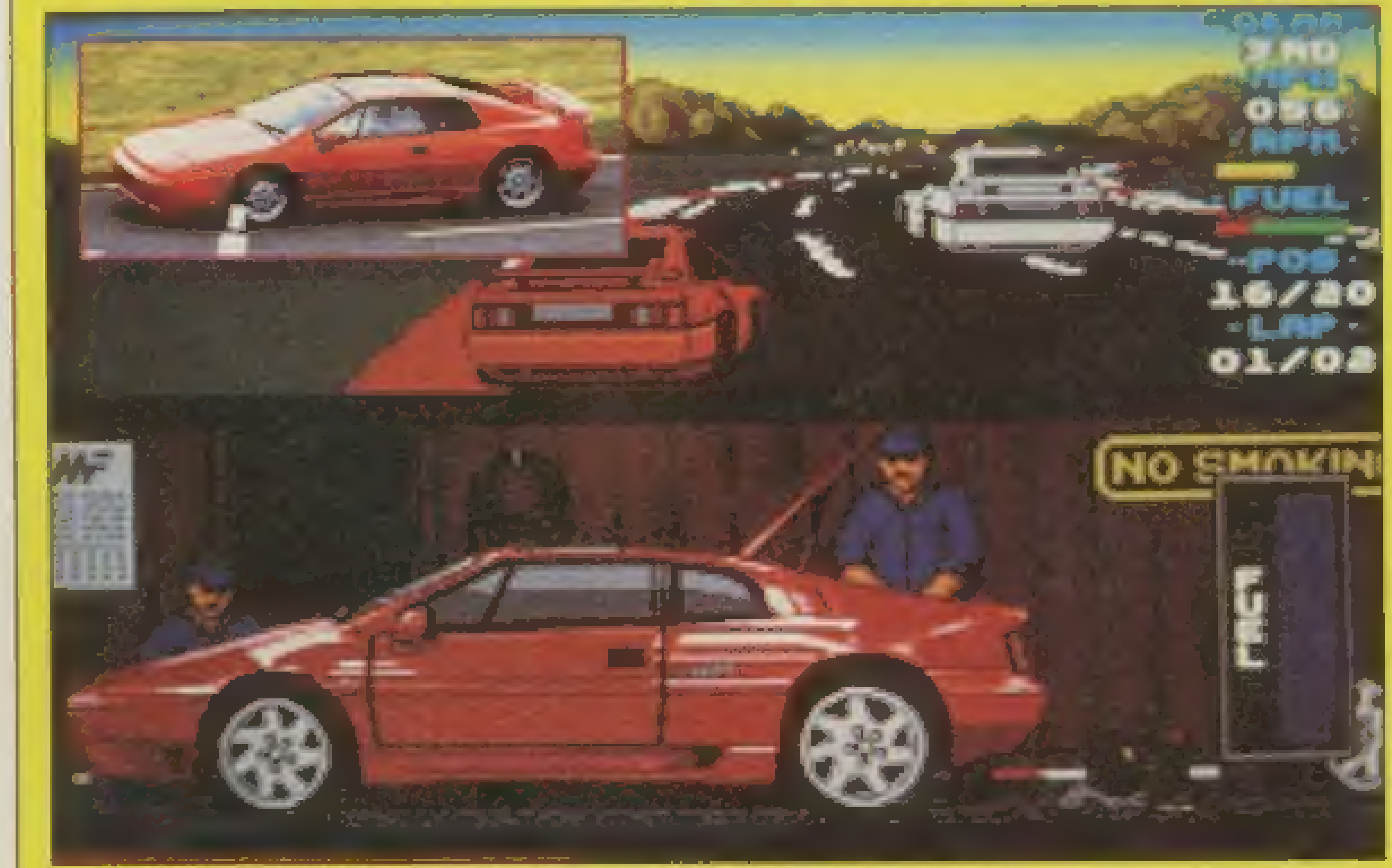
Finally *Lord Of The Rings* is Interplay Productions version of the famous Tolkien trilogy. *Bard's Tale* is £24.99 on PC and Amiga and *Battle Chess II* and *Lord Of The Rings* are both £29.99. ■

Elvira gets a new home

Horrorsoft's *Elvira Mistress Of The Dark* has found a new home at Accolade. The game, based on curvaceous cult glamour queen Elvira, was originally slated for release through the ill fated Tynesoft, which went into liquidation last month.

Horrorsoft had finished the game, but after Tynesoft's demise it had nowhere to place the product. Now the UK-based firm has a contract to release *Elvira* and its future horror-based game titles through the European arm of the US game house. ■

Gremlin's turbocharged racing game



• The Amiga version of Lotus Esprit Turbo, with the real thing in the inset.

Gremlin Graphics has created what it says is the best driving game of all time, and considering it is a simulation of the brand new Lotus Esprit Turbo that claim could well be true.

The Turbo is built for high performance road use, accelerating from 0-60mph in just 4.7 seconds.

The *Lotus Esprit Turbo* game features a split screen race between two equally matched Turbos, and up to 20 other cars, over a track made from the highest hills and tightest corners.

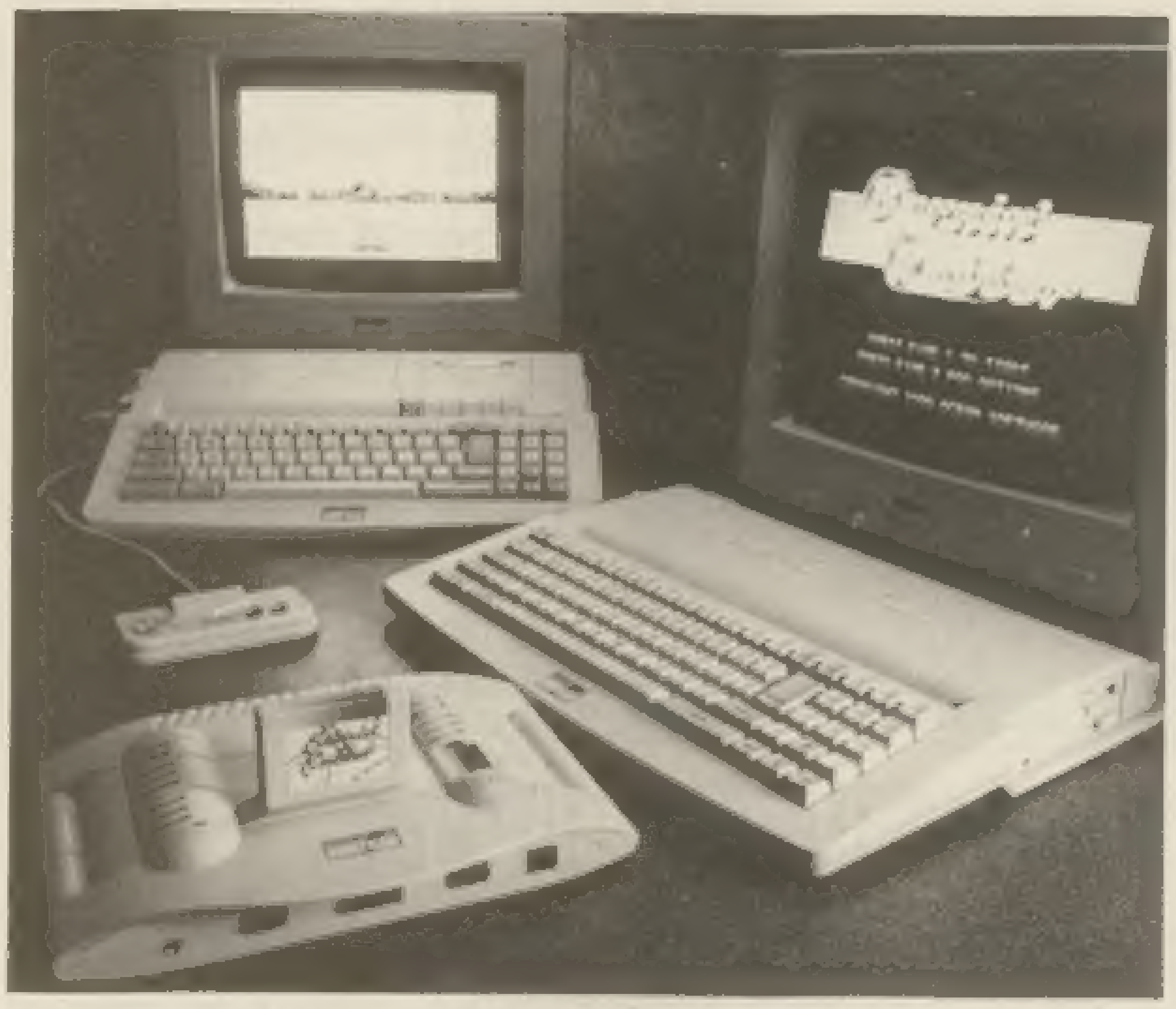
The game features three difficulty levels, each featuring different numbers of races – there are 32 tracks in all.

Amiga, ST and PC versions are available priced at £24.99, and CPC, C64 and Spectrum versions are priced at £14.99 disk, £10.99 cassette. ■

New-look CPCs have extra hardware which rivals 16-bit machines

CONSOLE AND CPC PLUSES TAKE 8-BITS INTO THE '90s

By Stuart Anderton



• The new range: GX4000 (foreground), 464 Plus (left) and 6128 Plus (right).

As we exclusively revealed in *Express* in February, Amstrad has unveiled an updated range of CPC computers and, in a radical move for the firm, a games console.

As we stated in *Express* 68, the two new CPCs have been named the 464 Plus and 6128 Plus, and replace the existing machines. They have been substantially re-styled to resemble the Amiga 500 and have also been upgraded internally.

The console, called the GX4000, is a new departure for Amstrad and is aimed at the Nintendo and Sega games machines. Internally it is based on 8-bit CPC technology.

The 464 Plus will sell for £229 with a monochrome monitor (now paper white rather than green) or £329 with a colour screen. The 6128 Plus will cost £329 for the mono and £429 for the colour versions. The GX4000 will be £99.

Amstrad sees the machines as targetting both the 8-bit Commodore 64 and the Atari ST. Said Amstrad's Roland Perry: "Our aim was to produce an 8-bit computer with many of the characteristics of a 16-bit, and I think we've succeeded."

When asked at the Paris press conference where the machines were launched if it wouldn't have been more logical to produce a 16-bit games machine, Alan Sugar, Amstrad's boss, replied: "If we were to follow the rules of logic we would never have made the 6128 because it is actually more expensive than an IBM-compatible. But logic does not prevail in the home computer business – if it did we would have been dead long ago."

The new CPC Pluses have been substantially revamped and redesigned to look like machines for 1990, but the electronics have been updated too.

New hardware drives the sound and graphics independently of the main processor, speeding up games and allowing more complex graphics to be used. A cartridge port has also been added.

The sound hardware allows three channels of sound to be driven from special programs using direct memory access techniques, so that playing tunes does not tie up processing time.

Hardware sprite handling supports 16 sprites at a time, each 16 x 16 pixels and using 16 colours. The colours can be set independently of the palette used for the rest of the screen, allowing 32 colours on-screen simultaneously.

The colours can be chosen from a palette of 4,096 – up from 27.

The 32-colour limit can be broken using 'scan line interrupts' which allow the palette to be altered half way through the screen – like the Amiga's HAM mode.

The new hardware also allows the screen to be scrolled a pixel at a time. This should hugely improve shoot-'em-ups and other game which use scrolling.

These hardware additions combine to make a games machine which can rival the ST. Unfortunately, the extra hardware is only accessible via the cartridge port, not by cassette or disk games.

Amstrad has also changed the expansion connector at the back of the CPCs, which means that existing peripherals will require an adapter to plug in.

Another change to the 6128 is that the cassette port has been removed, limiting the user to disk and cartridge games.

The cartridge port is shared by both models in the range, and the machines come with a cartridge containing the BASIC language and a racing game, *Burning Rubber*.

As cartridge games will be compatible with both CPCs and the new console, it seems likely that future titles will eventually concentrate on the cartridge format, although with 2.5 million CPCs sold the existing formats will continue to be supported for some time.

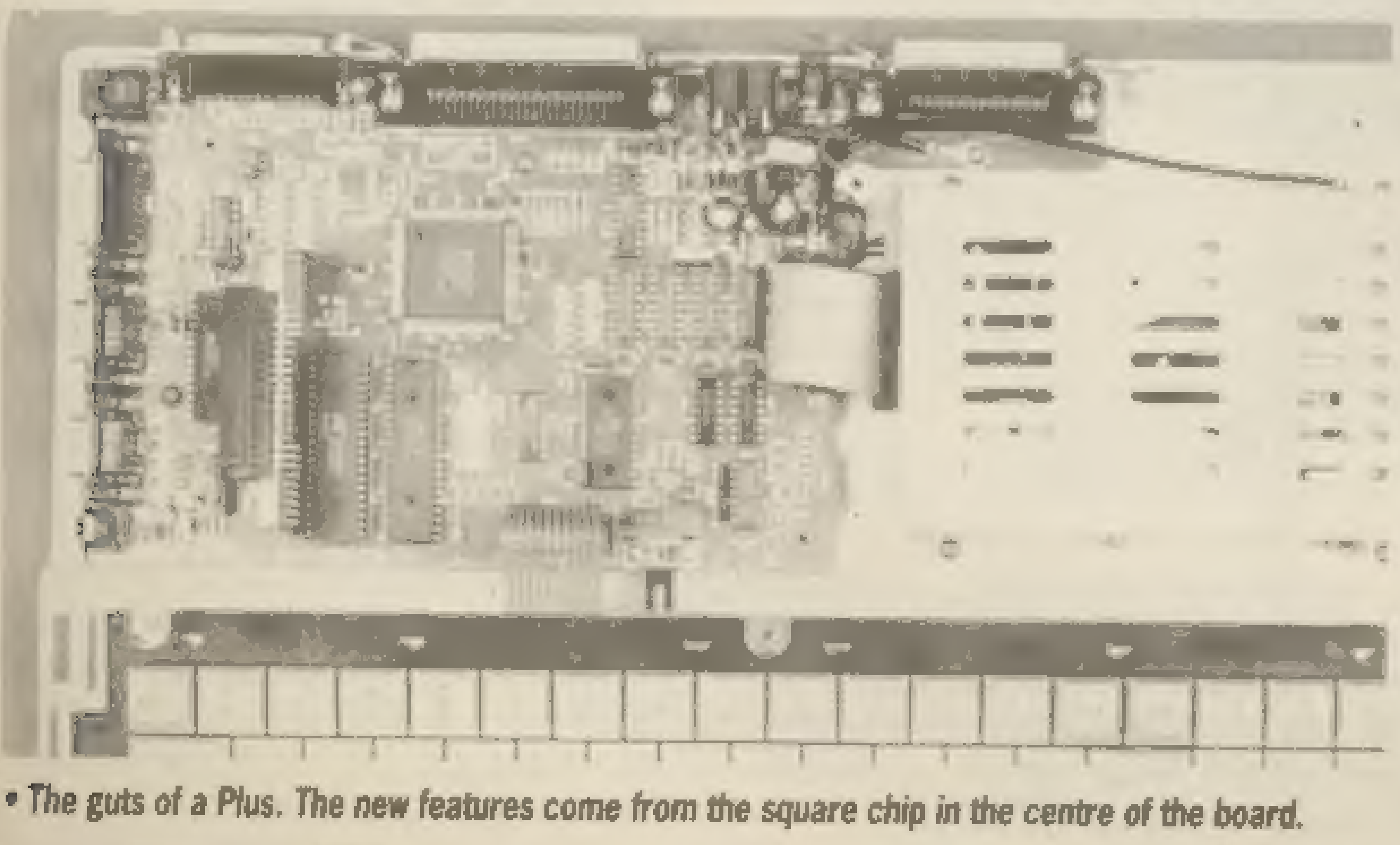
Games using the new facilities already announced include *Batman, Operation Thunderbolt, Plotting, Shadow Warriors, Chase HQ, Robocop II Epyx World Games, Crazy Cars II, Pro Tennis Tour, Kick Off II, Klax, Escape from the Planet of the Robot Monsters* and *Spiderman*.

The console, first predicted by *Express* last September, is basically a CPC without the keyboard, and contains all the graphics and sound enhancements of the Pluses.

Selling at £99, it is a direct competitor to the Nintendo and Sega machines, but Amstrad is not concerned about its rivals. At the launch Alan Sugar went so far as to thank the firms for showing him how to market a console.

Amstrad hopes that it will attract software support to the console by waiving the tight control that Nintendo keeps on the games for its machine. Companies such as Domark, Ocean and Anco have already pledged their support. ■

• Express Technical Editor Keith Pomfret takes a closer look at the new machines on page 8.



• The guts of a Plus. The new features come from the square chip in the centre of the board.

Express, first with the news!

This is how *Express* revealed the Amstrad console back last September and the new CPC range in February this year:

NEW COMPUTER EXPRESS
EXCLUSIVE
PC
AMIGA
ST
AMSTRAD CONSOLE
Secret plans leaked page 3
PC SHOW
SHOPPING EXPRESS 48
ONLY
NEW COMPUTER EXPRESS
BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY
AMIGA
ST
PC
CPC
PCW
AUTUMN LAUNCH FOR CPC TRIO
Enhanced 464 and 6128 models join Amstrad's new £100 console... page 3
GET COMMUNICATING
ESSENTIAL PERIPHERALS

ST network wired up

Ladbroke Computing International has announced a new local area network (LAN) for ST computers.

The Lantech LAN connects the computers together using simple coaxial cable and the bayonet fit or BNC connectors, as used on video recorders for video in and out.

The ST computers can be up to 20ft apart, and each node can be set up for access to hard and floppy drives at a transfer rate of 10 megabits per second.

Software controls the network and allows the STs to share data and peripherals such as printers.

The cable required for the connection is simple coaxial cable with either a solid or stranded copper core. Two kits are available, a starter kit for £374.99 and an add-on kit for just £179.99. Neither kit includes the cable, which available for £1.20 a metre. For more details call Ladbroke Computing International on 0772 203166.

MADE IN JAPAN

Latest from the Far East

Hoshiden Electronics has created the world's largest full colour LCD display. The 15-inch screen has a 1,280 by 800 pixel resolution, and as well as being the largest colour LCD ever made it is also fast having a 20 millisecond response time.

The screen is expected to take about two years to filter through into the commercial market, as Hoshiden has only begun shipping samples to its customers, like Apple Computer, this month. So it may be some considerable time before we see a product containing this ground breaking display.

Fujitsu will be making a new low priced version of the FM Towns CD-ROM computer for Panasonic.

The FM Towns has been selling so well that Fujitsu is looking to make in the region of £60 million from sales of the computer this coming year. Fujitsu has been manufacturing computer products for some time now for Panasonic's parent company Matsushita, and has been asking Matsushita to sell the FM Towns into home electronics shops under the Panasonic name since its first release.

Hitachi has announced the biggest capacity disk drive in the history of computing. The drive is designed for the HITAC M series of mainframe computers, and can store 35 gigabytes of data.

To give you an idea of how big that really is, typing at 100 words per minute 24 hours a day it would take you 119 years to fill it. The unit has an average seek time of 12 milliseconds, and a data transfer rate of 4.2 megabytes per second. Not only that, but the unit itself is small having a footprint of just 60 square centimetres, about a third of the size of previous machines.

The basic rental fee is £5,500 per month, and will ship in September this year, just ahead of rival Fujitsu's similar 30 gigabyte unit for the same market.

Hand-held PC now comes in under £200 mark

ATARI CUTS £50 OFF PORTFOLIO'S PRICE

The price of the Atari Portfolio is to drop by £50 to under £200.

The move is said to be in order to place the machine more effectively in same market as the electronic organisers, although informed speculation cites two different reasons.

One reason could be the pressure to drop to the price of equally successful but sub-£200 competitors, like the Sharp IQ, Agenda, Cambridge Z88 and Casio organisers.

The other more interesting reason could be that the price drop is paving the way for a new, faster Portfolio II. The old £250 price point would have to go in that case, to extend the life of the old machine once the new, possibly 286 powered, device comes on line.

Atari at first refused to confirm or deny the price drop, as reported in Karl Dallas' *DateFAX* newsletter, saying that they were more than satisfied with the machine's performance, and no price drops were necessary. But later quotes from an Atari spokesman have it that dropping the price of their palmtop engine was "one of the options that could be considered when a product reaches a certain level of maturity."

• The Portfolio: now under £200

Autodesk gets $2,000,000 from software pirates

Autodesk Inc, the publisher of the *AutoCAD* and *Animator* programs for the PC, has stated that it has reclaimed over $2 million from software pirates.

18 months after launching its own anti-piracy squad, the so-called 'Special Projects Department', the firm has received the money in payments from individuals and companies found to have infringed its copyright.

Sandra Boulton, Special Projects Director, said in a statement that "Our efforts are paying off, literally. We've seen a marked increase in the number of reported piracy cases, even though piracy itself is not on the rise."

Autodesk has had support in this move by law enforcement agencies worldwide, especially the American FBI and the Royal Canadian Mounted Police who have been, according to Ms Boulton "converting suspected pirates into apprehended pirates."

TRY A BALL INSTEAD

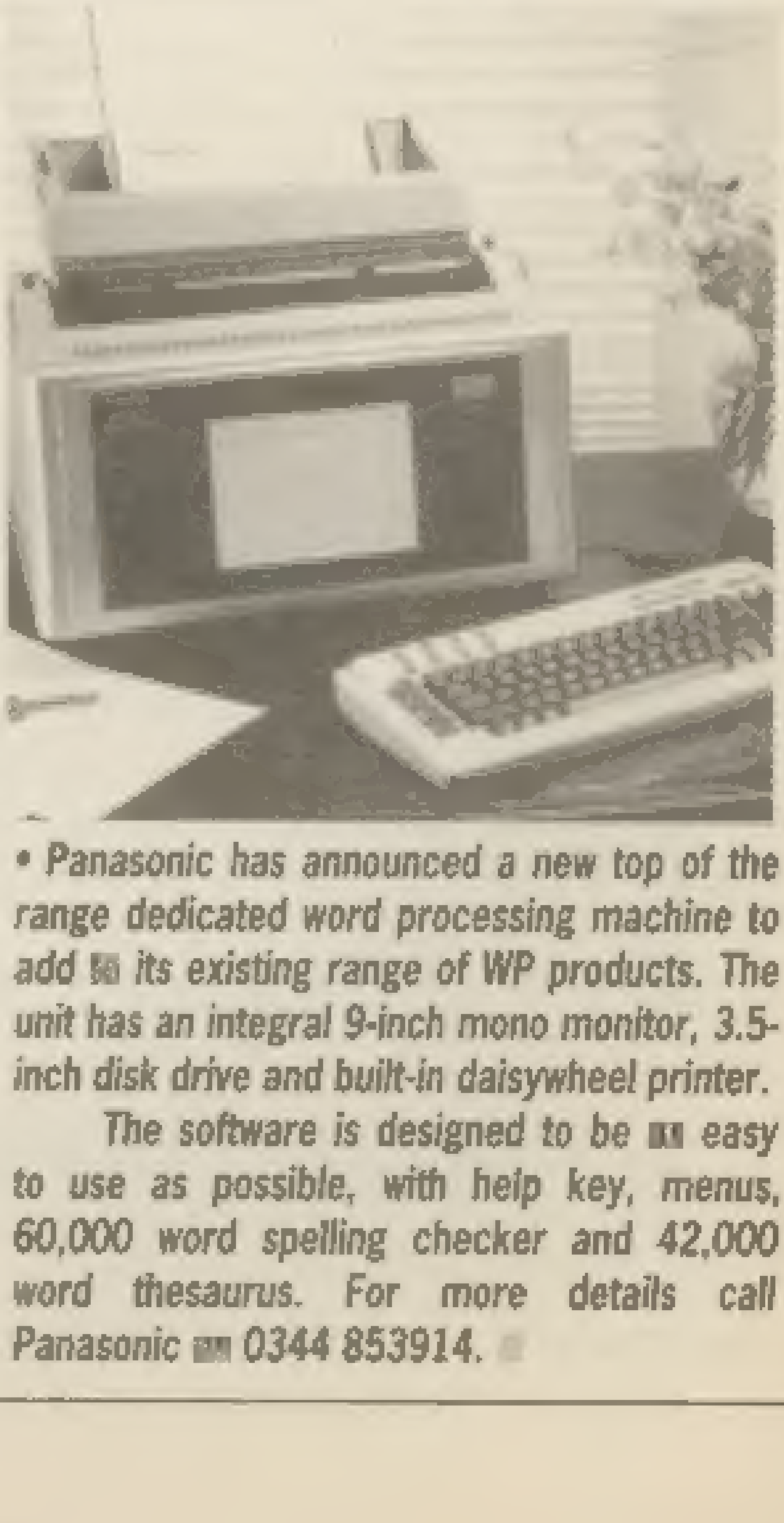
• Replacement mouse manufacturer Contriver has announced a new trackball with a low price tag. The Contrack Ball retails for just £34.99 and is compatible with the PC, Atari ST and Commodore Amiga, and at that price it trims 30 per cent off the cost of a track ball of similar quality. The Contrack is guaranteed for up to 10 million clicks, which Contriver say "costs you less than three thousandths of one pence per click". Contact Contriver on 0273 602622.

Protext now Arch rival

Arnor has announced version 5.0 of its popular word processor *Protext* for the PC, ST, and Amiga, as usual, but in a surprise move there will also be an Acorn Archimedes version.

The only major rival word processor on the Archimedes is *First Word Plus*, which is quite slow and not really a professional proposition. *Protext* however is fast and features a 110,000 word dictionary with phonetic word suggestion, the facility to load up to 36 files at once, split screen editing, index and contents creation, footnotes, proportional font support, printing in columns, a timed auto save feature, programmable mail merge language, macros and extensive foreign language character support.

Arnor also announced its intention to support the Archimedes with high performance products in the coming months. For further details call Arnor on 0733 68909.



• Panasonic has announced a new top of the range dedicated word processing machine to add to its existing range of WP products. The unit has an integral 9-inch mono monitor, 3.5-inch disk drive and built-in daisywheel printer.

The software is designed to be as easy to use as possible, with help key, menus, 60,000 word spelling checker and 42,000 word thesaurus. For more details call Panasonic on 0344 853914.

Fujitsu plans tiny palmtop

Fujitsu is planning to enter the palmtop computer market with a handy sized business computer with a full keyboard like the Poqet PC and Atari Portfolio.

The new machine is reputed to be half the size of a conventional book sized laptop, but despite this it will have a full QWERTY-type keyboard and run software from IC-based cards rather than disks. The computer will be out in small quantities towards the end of this year, with the full launch into volume production in 1991, at an enticing price point of just £375. The Fujitsu palmtop will be only the second such computer on the market, the only other being the Sony PalmTop with its pen-sensitive screen.

• Osicom's 386SX machine.

386 on the cheap

Osicom Technologies has announced a new low-priced 386SX based computer, including 14-inch VGA monitor and 40Mb hard drive for just £1,495.

The SL 386SX computer features five 16-bit expansion slots, a 386SX chip and a 3.5-inch high density disk drive, which gives you access to not only the best in standard DOS software, but also the upcoming applications in the 32-bit Intel world at a 16-bit price.

The SL uses reliable surface mount technology and although manufactured in the USA is backed by local tech support and service here in the UK. For more information call Osicom Technologies on 0222 796699.

Games System 100% compatible with the C64

COMMODORE GETS IN TO THE CONSOLE WAR

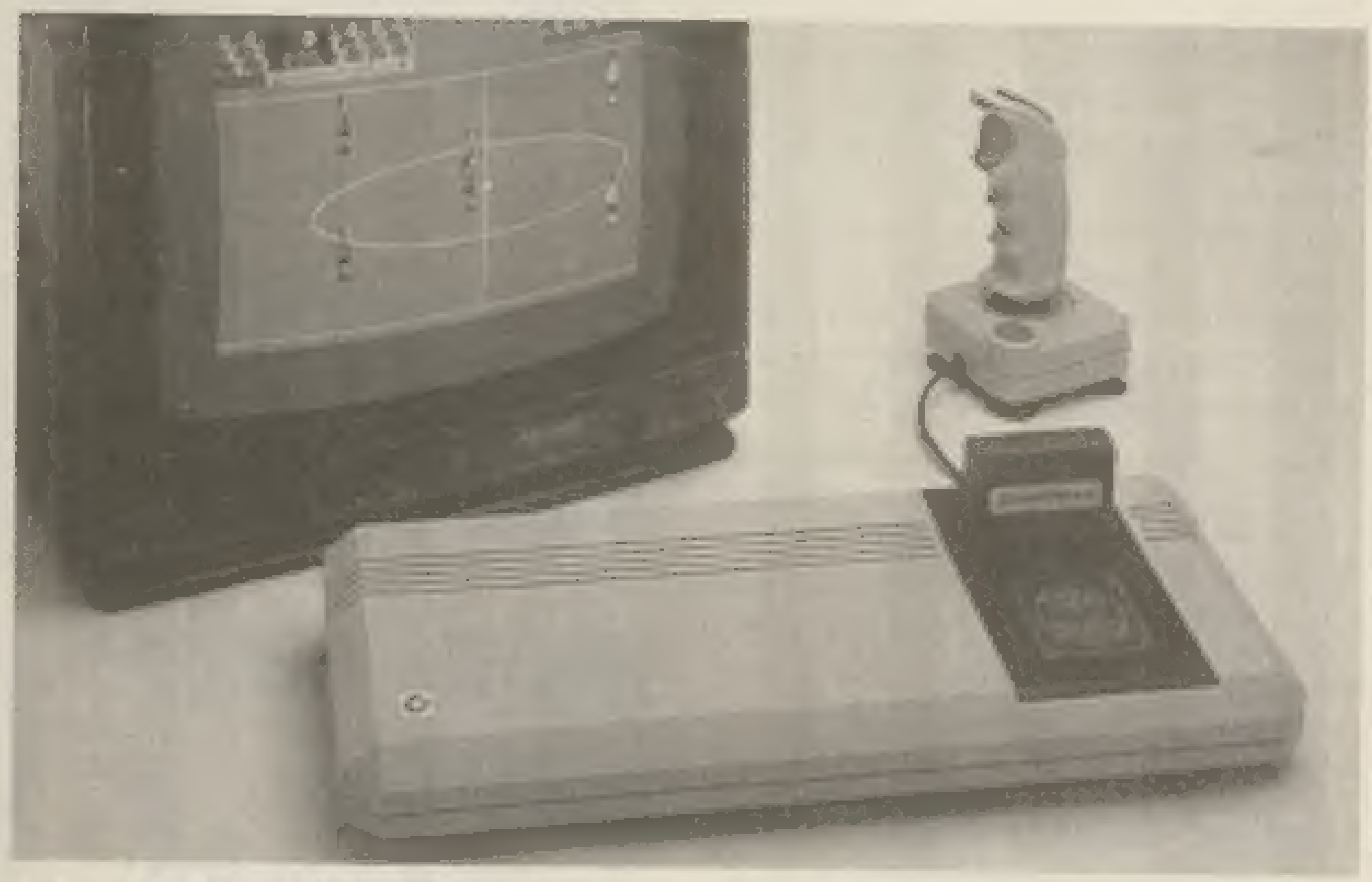
By Colin Campbell

Commodore has at last confirmed that it will be launching a console based on its 8-bit C64 at the Computer Entertainment Show next month.

The GS (Games System) is little more than a cartridge-based 64 without keyboard. Commodore says it has done little to change the original technical specification of the world's biggest selling home computer.

It will retail at £99 – the same price as Amstrad's CPC console which will also be launched in London on September 13. Trade sources are predicting widespread availability in the High Street by the beginning of November.

Buyers can count on a huge base of installed software. The C64 computer, launched in 1982, has a cartridge port already which is 100 per cent compatible with that of the console. The only differences between the two are in the RAM chips which have been altered slightly.



• Games System: available by November

However, the alterations have been so slight that users will notice no difference in audio, visuals or speed.

The £99 package will include one free cartridge which features four games. They are *Klax*, a puzzle game from Domark, System 3's cartoon adventure *Flimbo's Quest*, *Fiendish Freddy's Big Top O' Fun* from Mindscape and the old 64 classic *International Soccer*.

Software houses are expected to begin repackaging old 64 games into similar four game cartridges. Commodore is predicting nearly 100 new cartridge launches before Christmas.

Marketing manager Andrew Ball told *Express*: "The only changes from the original are a couple of adapters in the RAM chips which have been altered to take account of the cartridge loader."

On the simultaneous launch of the CPC console Ball said: "They will be worried about our huge software base."

C64 – built to be a console

The C64 was destined to become a console from its original release in 1982, featuring true hardware sprites, a powerful sound chip and a dedicated cartridge port for instant loading software.

The C64, C64C and C128 have all benefited from the original good design but apart from a brief overture of popularity some seven years ago, cartridge software hasn't taken off.

A new BASIC language, a musical sequencer and a mixed bag of utilities were the only things to use the C64's cartridge port.

The new Commodore GS console aims to change that and uses the architecture of the tried and tested C64 to do it. Apart from a few hardware tweaks to allow the use of more complex cartridges with more memory and levels, it remains essentially a C64 in a different box with no keyboard. While it may seem a little strange to use a 10-year-old design, the C64 architecture is well suited to the job, already possessing the hardware that other manufacturers bolted on to their consoles as an afterthought.

Russians set up shop selling cheap PC clones

Russians can finally buy IBM compatible computers, as a Moscow-based cooperative has announced that it will be selling high specification imported computers to the Russian public. But interestingly the Muscovites can pay for their AT and XT clones in roubles, rather than the normal hard currency like yen, dollars or deutschmarks.

The co-op called MMM has placed a full page ad in the magazine *Ogonyok* showing an 12MHz AT compatible with 1Mb of RAM, 40Mb hard disk, printer and EGA adapter for the equivalent of just £1,200. It also sells XT clones, for a similar knock down price of £1,044, a tad expensive for the west, but in Moscow there will be no shortage of orders, according to MMM chief Sergei Mavrodi.

As well as low prices, MMM is offering delivery within 10 days, and reputedly have a large stock of spare parts, should anything go wrong with the machines. What MMM is not offering is any idea where it is getting these cheap clones from.

• This interesting looking box is the EPC3000 Portable Power Conditioner. It takes all the spikes and other nasties out of the power supply, ensuring that your computer will be glitch free. The EPC3000 costs just £198. For more phone Launchpad Marketing Services on 0736 50940.

Apple allows Mac clone

Apple Computer, more famous for slapping a writ on imitators than encouraging them, has agreed an intellectual property agreement with Outbound Computers, makers of the Wallaby Mac laptop clone.

Neither firm wishes to comment on the agreement, but informed speculation in the US has it that Apple's laptop will shortly be phased out to be replaced by a version of the Wallaby under [illegible] different name tag.

The Wallaby is a lighter and faster Mac than the SE and Plus machines, having a 16MHz 68000, with 1Mb of memory expandable to 4Mb internally, a Mac format floppy drive and backlit LCD display. The rechargable battery runs the machine for up to four hours, and it has a detachable keyboard linked to the main box by an invisible infra-red link. ■

Win money on the pools

If you find yourself a little short of ready cash and are looking for a quick pools win to boost your flagging assets, why not try *Football Forecast* from Folio Shareware. Being shareware, the program will only cost you £3.50 to buy, and just £12.95 to register for updates and manuals.

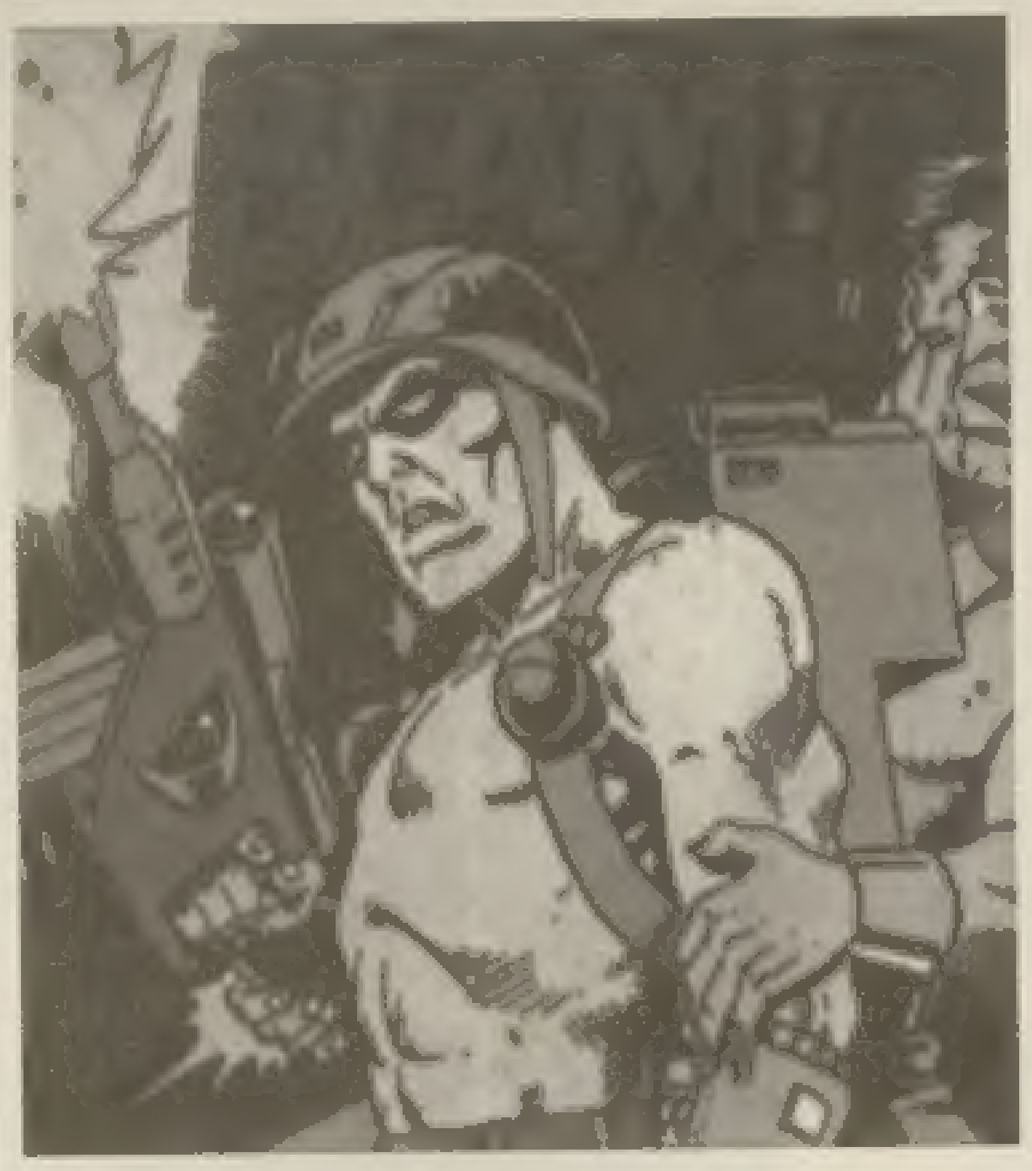
The PC-based program accepts data on the 218 teams of the English and Scottish leagues, which can then be updated on a weekly basis to include odds ratings and current bookmaking intelligence.

As well as forcasting probable outcomes, the expected pools payout can be calculated based on the available information. For information on how you can win big money [illegible] the pools, call 0274 393679. ■

Viruses rife in Japan

A recent virus in Tokyo ran riot through a number of institutions causing a million yen's worth of damage, and all due to the lethargy of system managers, according to a recent survey.

It seems most systems in Tokyo are unprotected from viral attack, although time lost to recovery from the attacks ranged from 10 hours to over 200 hours for one unfortunate company. ■



• New from Krisalis comes Rogue Trooper, the game based on the popular 2000AD comic book character. The game is set in the far future, where RT is a genetically engineered soldier in war between the Norts and the Southers, two futuristic races who have forgotten what the war was about in the first place.

RT was originally a game for the 8-bit computers by Piranha, of course, but this is an all new 16-bit version for ST and Amiga. Rogue Trooper will be out in late September, priced at £24.99. ■

• Turtle to £80 • Gameboy to £70

NINTENDO UK PRICE CUTS

Nindendo's games consoles look set to undercut their rivals in the run up to Christmas as a change in distributor has led to price cuts, including dropping the Gameboy to just £70.

After last week's announcement that Serif Games has lost the rights to distribute the Nintendo games console, Bandai has announced its plans for the release of special Nintendo products for the Computer Entertainment Show.

The aggressive pricing strategy includes the Mutant Machine Turtle Pack at £80 (previously expected to be £100), the Action Set at £100 rather than £130, and the biggest surprise of the show, the Nintendo Gameboy coming out officially in the UK at £70. This is a big reduction on the grey import price of between £90 and £130 which has rocketed the portable game console to popularity over the last year.

The low price point should also give Atari food for thought when it considers the price for its own Lynx console, now stuck out on a limb [illegible] over £175. ■

Saucy silicon for safe sex

A US librarian has predicted that the perfect sex partner of the future will be your home computer, wired directly into the pleasure centres of your brain.

In [illegible] report in the *Reno Gazette Journal* Mr Milton Rolf, a librarian and lecturer from Nevada and long time science fiction fan, says that people will be able to link their computers directly to their brains to create their own on-line sexual fantasies.

Mr Rolf lectures on robotics, and he uses his unusual views on the future of sexual relations to grab the students attention before going into less interesting topics.

He does insist that his ideas are not just a joke, allowing futuristic programmers to experiment with their erotic fantasies in thought rather than deed.

And after all, "the only sex organ anybody has is in their brain," says Mr Rolf. ■

Learning to read..

Scientists at the State University Of New York are teaching their computers to read handwritten and printed text.

10 separate research projects at the university's Document Image Understanding Lab are looking into ways to improve the computer's ability to understand complex textual and image data. The research is mostly funded by the US Postal Service, the body with most to gain from computers being able to read, but The National Science Foundation and Kodak also have a financial interest in the projects.

If computers could read, then perhaps they could answer letters, take on piles of mundane office paperwork and even sort the mail. ■

..and learning to speak

***Softspeak* is a new software speech synthesiser on the PC. The program runs on any AT or clone, and produces understandable speech on the computer using stored words rather than synthetic phonetic building blocks.**

All this is done in software so no additional hardware is required. The package comes on six disks and features an EGA/VGA voice editor and speech compiler for stand-alone speech files, and all this for just £52. For a small fee you can also purchase a board to allow you to record your own speech for the unit.

More information about *Softspeak* is available from Quantech on 091-228 0513. ■

PoW DPs

Up to a hundred British computer operators were thought to be trapped in Iraq and occupied Kuwait at the beginning of this week.

Most of the data processing staff work for banks and other financial institutions, although some are employees of hardware manufacturers.

It is understood that most computer systems in Kuwait were completely shut down on the day of Saddam Hussein's invasion. ■

NEW COMPUTER EXPRESS

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AMSTRAD

EIGHT-BITS FOR THE NINETEEN NINETIES

The CPC has received a major facelift as the new Plus models desperately try to look like Amigas. Keith Pomfret got his screwdriver out to find out if beauty is really only skin deep...

The new CPC Pluses will be in the shops next month and Amstrad hopes to take a good share of this year's Christmas market with a set of upgraded and substantially re-styled machines. Hardware sprites, console-style cartridge ports and the new external designs look set to guarantee the CPC range a place in the new decade. Other hardware will allow the 8-bit CPC Pluses to provide features normally only seen on 16-bit machines.

Software utilising the cartridge port will benefit from sound and graphics handling routines that are managed independently of the main processor. As well as allowing more efficient use of sound, this will reduce processor access and could speed games up by allowing the processor to get on with running the program without regular interruptions from sound and graphics chips.

The seven-year-old design been upgraded with add-ons that give it the graphics capabilities of its competitors while generally retaining compatibility with the 12,000-plus titles that existing CPC 6128 and 464s already run. With 2.5 million CPCs already sold, and CP/M running on the disk versions, the Plus range will have no shortage of existing software while the library of enhanced cartridge software evolves.

It appears that cassette and disk based games will not use the new facilities, at least at first, although Amstrad is reticent on the subject. Plenty of cartridge games, which will benefiit from the new hardware, are expected.

THREE'S COMPANY

The three models in the range are the 464 Plus, the 6128 Plus and a startlingly space-age GX4000 console which loads software from ROM cartridges. The new 464 and 6128 benefit from the inclusion of the cartridge ports too.

The machines are more than a simple cosmetic revamp and Amstrad has paid close attention to market forces while redesigning the machines.

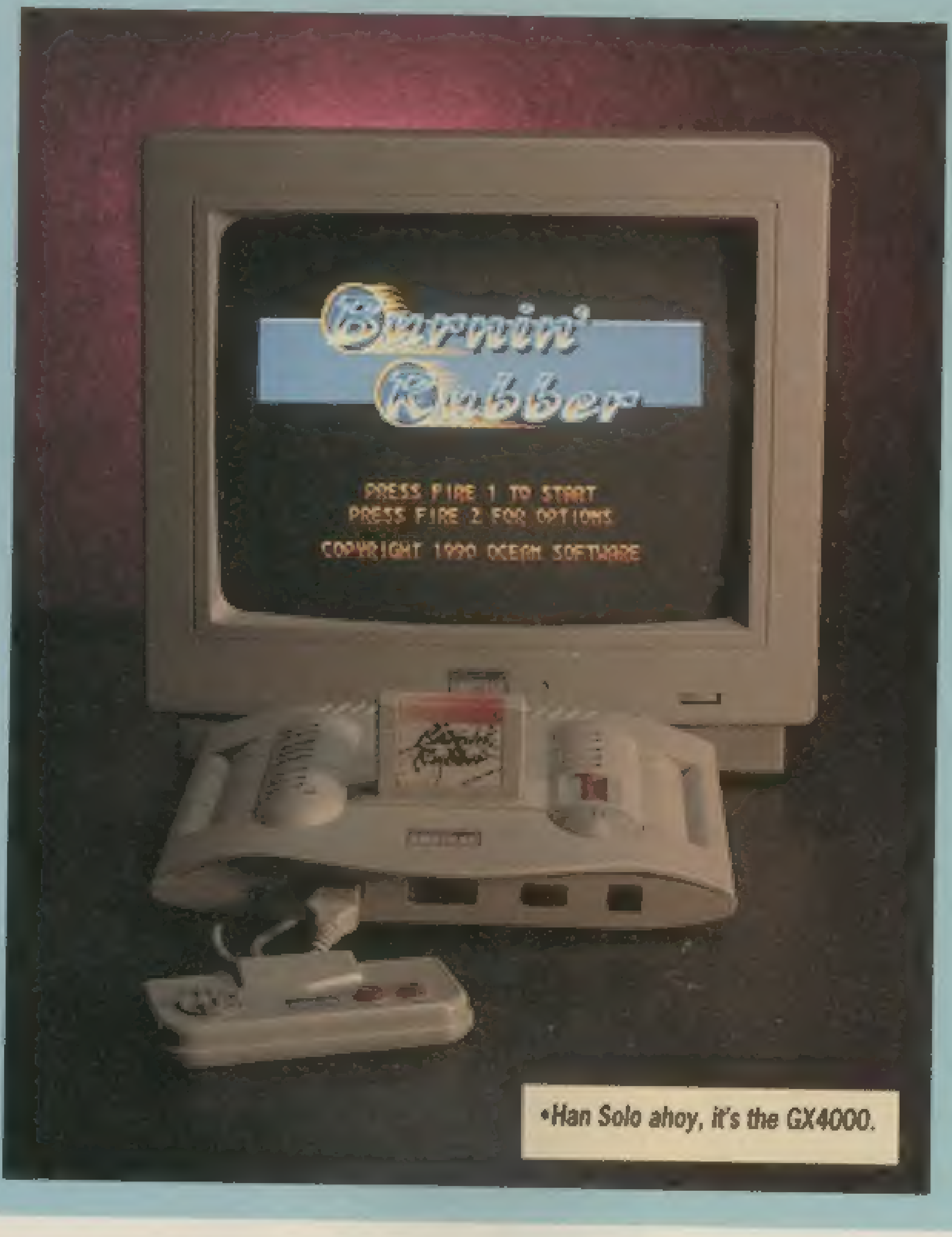
The 464 and 6128 Plus models remain generally compatible with existing software. They use essentially the same BASIC, firmware and in the case of the 6128, disk operating system. As these are now on a cartridge the new machine will not run until a cartridge has been inserted. This means that any further enhancements of the machine's specification will be as simple as plugging in a cartridge, but with cartridges not much bigger than a box of matches, the loss of the main system cartridge could cause problems. The BASIC cartridge also includes a racing game, *Burning Rubber*.

Gone are the long dark grey boxes with a cassette or disk drive in the end. In their place is a light grey wedge designed to please the eye and fitting in with the style established by the Amiga, ST and Archimedes. The similarity stretches to the Amstrad name embossed on the case in true Amiga style.

On the 464 Plus, the cassette deck is built in to the top right, above the keyboard. The 6128 has the 3-inch disk drive in the standard ST/Amiga/A3000 position on the right-hand side.

The left side has a pair of conventional joystick

THE GX4000 CONSOLE



•*Han Solo ahoy, it's the GX4000.*

Amstrad's late hop into the sub-£100 console market may look like a strange direction to take, but in the Christmas spending boom the GX4000 console will give Sega and Nintendo a run for their money.

The console is a small light-grey unit shaped like a cross between a discus and a *Star Wars* space freighter. Modulator (TV) and SCART connectors are at the rear and a cartridge slot adorns the top along with a chunky on/off switch and reset button.The front sports the joystick connectors.

Technically, the GX4000 owes a lot of its parentage to the CPC range but custom chips and 90s hardware make sure that it's a powerful graphics and sound engine. The sound chip is a bit out-dated, but still sounds like a 'real' arcade machine, albeit an old one, and the graphics can handle 16-colour sprites.

The console comes with two games controllers which are flat 'pad' style joysticks with a couple of fire buttons. These plug into the two conventional joystick ports on the front.

There is also an analogue joystick port to allow games designers to build in proportional control and an auxiliary socket to allow the connection of light guns and other peripherals. Sound can be taken from a stereo output at the rear or directly to a monitor with sound facilities.

Visuals are well catered for with a TV modulator which lets it use everything from the teeniest mono portable to the largest projector TV. A SCART socket allows connection to a monitor or TV with the SCART connector and gives the better resolution associated with direct connection. Finally, an Amstrad colour or mono monitor can be connected to a dedicated socket with stereo sound connections.

The *Burnin' Rubber* cartridge that comes with it has squealing tyres, crashing cars and a race that can end in a devastating crash with your car bouncing off the track like a demented rugby ball.

Software will soon be available, with a dozen titles promised by Christmas from Ocean alone. Games expected soon include *Batman, Robocop II, Operation Thunderbolt* and *Chase HQ*. Eagerly awaited from Anco will be *Kick Off II*, and many other games publishers are working on titles.

Amstrad's policy to give people what they want at a price they can afford using tried and tested technology with innovative design and planning should have the £99 GX4000 seeing off waves of aliens for the forseeable future.

---

ports, an analogue joystick port for use with cartridge games, stereo sound output, auxiliary socket for light pens and other peripherals and a cartridge port.

The rear panel has a mains connector, monitor connector, expansion socket and printer port. The 6128 Plus has an extra connector for a second disk drive, but loses the cassette connections of the earlier models. This means that someone upgrading from a 464 to the new 6128 gains the use of cartridge software as well as disk but cannot use their cassette programs.

The expansion port has also been changed, but it's expected that it will be compatible with existing peripherals if they use an adapter. The printer port has been upgraded to the full eight bits from the old CPCs seven.

A rethink of the display has meant a rethink of monitors too. The resolution remains the same but instead of colour or green, the choice is now colour or paper white. The new monitors have direct sound connections and the audio output is fed directly to a pair of speakers in the matching light grey cabinet.

This is a vast improvement on the tiny (and tinny!) speaker on the old CPCs. The same 'three square-waves and a bit of noise' soundchip has been retained, but, with decent amplification now provided it is a lot more effective.

THE COMPETITION

With the added hardware, the CPC Plus models are not quite as pretty and tuneful as a C64/128 but are a lot more practical and should be more reliable.

In the standard CPC mode, the machines don't hold a card to, say, an Atari ST for graphics. Sound is on a par with the ST because they share the same sound chip. However software running on the new CPC cartridges is far superior to the normal 8-bit games and with dedicated hardware to speed things up and handle graphics and sound, it can finally compete with 16-bit machines for on-screen action.

SPLIT LEVEL

The new CPCs perform on two levels. First, they are claimed to be fully compatible with all existing CPC software and will run it 'as is' with no changes and no use of the new hardware. Exhaustive tests found only three existing programs that baulked at the new machines.

Secondly, they have enhanced hardware which can at present only be accessed from new cartridge-based software. The enhancements include hardware sprites and graphics routines that will make the CPC a serious contender in the market dominated by the Atari ST, Commodore 64 and Sega console. This lucrative low-end market will be important toward the end of the year and so the CPC Pluses will come in at a realistic price and a specification that will cause a few tugs at the parental sleeve in December. ■

TECHNICALLY SPEAKING

The new CPC range based around a Z80A CPU running at a sedate 4MHz.

Direct memory access and an 18,000 gate custom chip allows the sound chip to perform its tuneful job without burdening the processor. The custom chip has an internal 2K RAM cache for temporary storage.

The AY38912 sound chip has been around for nearly 10 years now but was originally designed to drive the sound in arcade machines. This gives the Amstrad machines a sound reminiscent of the famous coin-ops.

A total of 64K (128K on the 6128 Plus) of RAM is used for data storage with screen memory accounting for the high page (16K between C000 and FFFF).

There are 16 hardware sprites, each capable of displaying 16 colours from a palette of 4,096 and these are combined with the 16 screen colours to make a 32-colour display the single pixel scrolling.

The cartridges contain a ROM chip that can hold up to 128K of game code and a dedicated chip that contains a security software lock to deter piracy.

THE OFFICIAL LINE

Roland Perry was the man who turned the CPC from a 6502-based nightmare to a Z80-based working machine back in 1983. Seven years on, he's Amstrad's Technical Manager and has retained a close connection with the CPC Plus project.

He confirmed that the new Plus range was designed to be compatible with the earlier CPCs and said: "We spoke to software houses and they told us what they wanted from a machine. The new hardware has been designed to make programming easier."

He added: "We've produced an 8-bit machine that does what a 16-bit machine does."

The new hardware vastly improves the graphics and sound abilities of the CPC, but Perry refused to be drawn on whether the new hardware could be easily accessed by users, saying: "It's not something that we'd encourage people to attempt."

PRICES

GX4000 console	£99
464 Plus mono	£230
464 Plus colour	£330
6128 Plus mono	£330
6128 Plus colour	£430

The 464 and 6128 Plus prices are £40 more than the current 464 and 6128 prices. The £40 buys you a cartridge port, enhanced hardware to take advantage of the cartridge software and sound that comes through 'decent' speakers. The mono versions are paper white instead of the utilitarian olive green of the existing machines.

DON'T BUY A PC!

If your boss is piling on the pressure and you're obliged to take work home, don't go and buy a PC contemptible. Instead, buy a PC emulator for your ST.

And, thanks to the weakness of the pound (I blame that Mrs Thatch myself), Gasteiner has dropped the price of its AT-Speed by £60 to £239.95. It has a Norton factor of 6.7 (translation: quite fast enough, thank you very much) and supports CGA, Hercules, Tandon 1000 and Olivetti display modes. Unfortunately there isn't an STE version – though it's coming.

Alternatively you could go PC-Speed, a somewhat slower and cheaper emulator that's just dropped by £70 to £179.95 (£199.95 for STE version).

Get to it: call Gasteiner on 081-885 1953 and tell 'em Steve Carey said you weren't to buy a PC contemptible.

MAKE IT THE EASY WAY

OK so you have an ST (you have an Amiga? Bugger off and leave us alone!), you want to get into MIDI and you intend to become a millionaire popstar. Unfortunately there's just a couple of problems: you have a tin ear and fingers like overripe cucumbers.

Enter the bizarrely named *Band in a Box*, a software solution to your lack of ability. It provides automatic accompaniment to 24 popular styles of music, using your ST and a sound module.

The program enables you to type in chords onto a lead sheet-style screen using standard chord symbols (such as, erm, Gm7b9 or, um, Bbmaj7). Then you just sit back and listen while out of your ST – or, more exactly, out of your ST via a MIDI sound source – comes a whole load of very convincing bass, drum and piano parts in the style chosen (after all, you'd be pretty miffed if they weren't in the style chosen, wouldn't you?).

You can save the backing as MIDI files for loading up into your favourite sequencer (while we're on that subject, see the next item); cut, copy and paste to your heart's content; store 400 songs on a disk; and pre-set configurations for popular modules such as the MT-32 and the Korg M1. So whether your taste is *Johnny B. Goode* (straight blues), boring old pop ballad (*Yesterday*) or even, God help us, country, you don't even need to start from scratch.

And there's more, because in addition you can buy MIDI 'books' of 250 songs on disk, all ready for use.

Band in a Box costs £45 from Zone Distribution, 5 Abbeville Rd, London SW4 (081-766 6564), or £69 including two MIDI books (*Mostly Jazz* and *Mostly Pop*).

THE MAN FROM ATARI, HE SAY NO

Next month's first Computer Entertainment Show, occupying a prime position in the calendar and one roughly equivalent to the PC Show of beloved (shome mishtake shurely) memory, is now but a very few weeks away.

Taking place at Earls Court on the weekend of September 15 and 16, it promises to be a frantically busy couple of days – definitely the place to be if you're at all interested in the ST, and especially its abilities as a games machine.

A golden opportunity, you might think, for Atari to get out there and kick some ass. After all, it no doubt has exciting plans for the ST that it would like to share with us all at this prestigious event, yes? Well, no. For reasons best known to itself, Atari in its infinite wisdom has decided you don't deserve (or want – which is worse?) the opportunity to see what the company's up to.

Sometimes I wonder how the company ever managed to come up with the ST in the first place.

520ST
ATARI
DISCOVERY PACK
WORK, LEARN AND PLAY WITH YOUR ATARI ST
DISCOVER THE ATARI ST BOOK

• It's good to see that Menzies, the newsagent chain, has finally come to its senses, dropped the Amiga and decided to go instead for the ST Discovery packj(above). Not before time, either!

Why should you care, I hear you ask, when after all you already own an ST. Think about it, though: the more people who own an ST, the more plentiful and the higher quality the software available for it. So get out there and persuade all your friends to buy STs!

COSH WHAT A BARGAIN

So you want to start doing some stuff with MIDI but you don't know where to start and anyway everything seems to cost so much and someone told you C-Lab was the thing to buy but it costs hundreds of pounds and what do they think you are made of money?

Problem solved. *Henry Cosh Sequencer*, PD, £2.50 from any half decent library (check out the ads in *Express*). End of chat, job done.

MOUSE ATTACKED BY RABBIT

I own a rabbit, which lives in the same room as my ST. Mouse lead proved irresistible: result, no mouse. If you're in a similar situation, I'd recommend the new Gasteiner mouse, which is smoother, faster and better looking than the standard Atari jobbie (mind you, that's not saying much). Price: £19.95. Source: Gasteiner, 081-365 1151.

COME FORTH

Programmers in Forth of the world unite, you have nothing to lose but your bugs. The first International Forth Conference to be held since Eastern Europe arose and threw off its chains is to be held in the UK.

Large Systems – Forth in Control in the '90s takes place at The Potters Heron, Ampfield, Hampshire on October 12-14. Interested? Call MPE, the conference organiser, on 0703 631441.

BREAK THE LANGUAGE BARRIER

We're all Europeans now, they keep telling us, but what they don't do is tell us how to talk European. Well, Academic Software's latest release, *ST Vocab*, should help a bit. At the very least it should help you to up your marks in those awful tests your teacher is devising for you even as you read this for when you get back to school ('scuse my language).

If you're having trouble with your accents it can even help there too – though not, unfortunately, your accent. *ST Vocab* costs £10.99 from Academic Software, 128 Ingram Avenue, Bedgrove, Aylesbury, Bucks HP21 9DJ.

HOW TO GET BIGGER

If you're just starting up an ST public domain library, newsletter or user group, or have written a brilliant demo or program you're sure people will be desperate to get their hands on, or you just have some ST-related information, why not share your glad tidings with the country's 280,000 ST owners?

Simply send all the relevant details, including prices, contact address or phone number and a copy of the software or publication you want to publicise – to me, Steve Carey at Future Publishing, 30 Monmouth St, Bath BA2 2BW. It really is as easy as that.

ST JOB SHOP

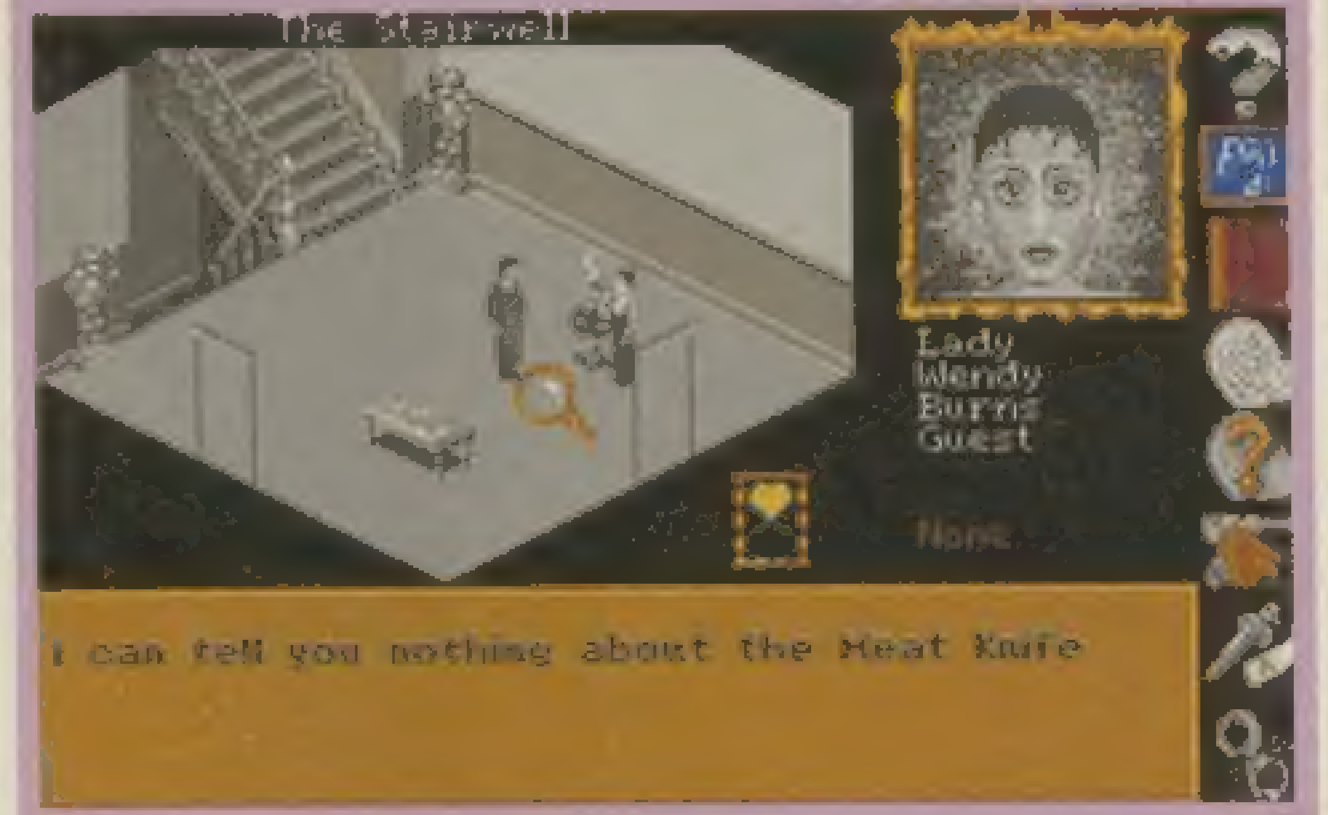
How would you like to work for *ST Format*, Britain's biggest and best-selling magazine for the Atari? Turn at once to Express Jobs for more information on a fine opportunity to come and work one desk along from me!

Steve Carey

MURDER

ST GAME of the WEEK

US Gold • £19.99



I can tell you nothing about the Meat Knife

The spate of Miss Marple and Columbo mysteries on the television are an indication that murder is a healthy summer activity and the software publishers are cashing in. Last month CRL released *Herewith the Clues*, a murder game based around Dennis Wheatley novels, and this week US Gold is poised to release its Agatha Christie-style question and answer game.

The main part of *Murder* is played through a window showing a 3D isometric view of the different rooms. When *Murder* begins, you're stood next to a dead body and limited clues are available. The idea is to explore the house, seeking out guests and interrogating them in a bid to discover both the murderer and the murder weapon.

As you meet people roaming the rooms you click on an icon to indicte that you wish to interrogate them. A number of new blockbuilding icons appear and you can then build up the question you wish to ask. Interrogations are limited to "What was the relationship between Mrs Mopp and the deceased" or "What do you know about the palette knife". Answers are sufficiently enlightening to enable you to make slow progress towards discovering the murderer.

Besides the question and answer routine, you can also glean evidence in other ways too. Items left around the house can be examined to collect a unique fingerprint. This can be stored and tagged to tell you where it came from. Many of the characters are carrying suspicious objects such as guns or knives and these can be similarly scrutinised.

Whenever you think you've discovered a potentially useful piece of information you can click on another icon to write it into a notebook. At any point in the game you can bring up the notebook and assess the knowledge you've discovered.

If your choice of murderer and weapon is correct, a newspaper informs you you've solved the murder. If either choice is wrong the murder remains unsolved.

Constructing the questions you want to ask can be frustrating, especially when it turns out the reply is completely useless. A far better system could have been designed. Another criticism is the graphics. Most games constantly strive to extend the ST's 16-colour palette but in *Murder* it's been severely limited. All the rooms and characters are shown in black and white whereas a sepia tint would have reinforced the 1930s atmosphere of the game far better.

Despite these criticisms there's something inherently absorbing about solving murder puzzles. *Murder* has captured the same addictive elements in *Cluedo* which keep you coming back for more. It's unlikely you'll want to play all the 3.5 million murders on offer but you're going to have enormous fun along the way.

Mark Higham

PC

DIY SAVES DOSH

The price of PCs, as highlighted in Express 91, is falling rapidly. It's possible to buy a basic 8088 XT for around £400, but for much less if you're prepared to build the unit yourself. You really don't need to be an electronics engineer to build a PC; the components which make up the finished machine are so modular that it's really just a question of nuts, bolts and plug-in cables.

When I bought my current 386 beastie, it came in bits. This gave me the chance to assemble the machine myself, making sure that all the parts were properly aligned and set up to my own satisfaction. While most reputable suppliers build their machines to a good standard, it's more satisfying to know you've done it yourself, and it gives you an insight into the construction of a machine.

The keyboard, monitor and case come complete, even in a kit, and there are four basic types of internal component: motherboard, power supply, drives and expansion cards. The motherboard contains the major part of the electronics and comes ready-built. You need to bolt it into the case and connect it to the power supply, keyboard and speaker. The power supply is again a self-contained box which bolts into the case and comes complete with an octopus of flying leads. These go to the motherboard, and any floppy or hard disk drives in the machine. The connectors on the leads simply push into sockets on the board and drives.

The drives themselves bolt into place in cradles attached to the case – four screws slot through the sides of each drive. As well as the power leads, drives also need to be connected to the floppy or hard disk controller via ribbon cables which carry data and control information.

The disk controller may be part of the motherboard electronics, but more usually it will be located in a small secondary expansion card which is plugged into one of the edge connector sockets on the main board.

A similar expansion card will also be used to provide the video circuitry to drive the monitor. The lead to the monitor is connected through a slot in the back of the case.

If you want to add serial ports (for a modem or a mouse) or a printer port, these can be added in a single card, often combined with a clock and games port. Some motherboards have these features built in, so check.

It won't normally take more than a couple of hours to build a PC, and could save you as much as 30 per cent of the cost. Companies like 3TH (0865 791452) advertise a basic 8MHz XT with a single floppy for £219. With a mono monitor and VAT you're still likely to pay under £350.

- **Turn to page 45 for a description of how to upgrade a PC XT into a fully-fledged 286 AT clone.**

BIG IS BEAUTIFUL

PC products seem to be getting bigger and bigger these days, and not just in memory terms: the boxes take up more room on the shelf. The box for *DESKpress* is over 10 inches wide and contains 15 5.25-inch disks and another eight 3.5-inchers. The latest version of *Harvard Graphics* comes on a total of 17 disks.

What the world is crying out for is a new disk standard. By this, I don't mean the 2.88Mb 3.5-inch disks that are rumoured for introduction in the autumn, but a move away from the still current standard of 360K 5.25-inch disks as the lowest common denominator.

It's about time software which requires a high spec machine to run it – *Harvard* for instance, needs a 640K machine with 256K EGA card and really a 286 or above to get usable speed – offered the older 360K floppy disks only as an option.

There are few AT-class machines without either a 1.2Mb 5.25-inch drive or a 720K 3.5-inch. Supplying on these formats would cut costs and save a lot of disk swaps on installation.

It would also prevent more and more companies from having to supply programs in compressed formats.

While on the soap box about master disks, why can't software houses supply enough of those clear plastic wallets to clip the disks into the massive ring binders holding the manuals. *Harvard* supplies only half the number necessary and *WordPerfect* doesn't offer any at all. This means that when you slide the fancy binder out of its slip sleeve, the disks invariably drop on the floor.

The cost of disk wallets can't be above a few pence, and on a £300 product it's just plain mean not to do the decent thing.

THE WESTERN BLOC

Bloc Publishing, a US company which has produced many a high-quality PC utility, has agreed to hand UK distribution rights in its products to Software Toolworks.

This should mean a considerably higher profile for the goodies over here. They include *PopDrop Plus*, the TSR manager covered before in this column, and *Corporate Ladder*, a very handy tool for designing and printing organisational charts.

Other offerings include form design and form filling tools called *FormTool* and *FormFiller*, and a front-end menu system called *DiskVision*. However, the most interesting in the list due to be released in September is the oddly-named *Page Garden*. This claims to be a page design program for ink-jet and laser printers which works from the DOS prompt. It was designed by one Dan Bricklin, the man credited with the invention of the computer spreadsheet.

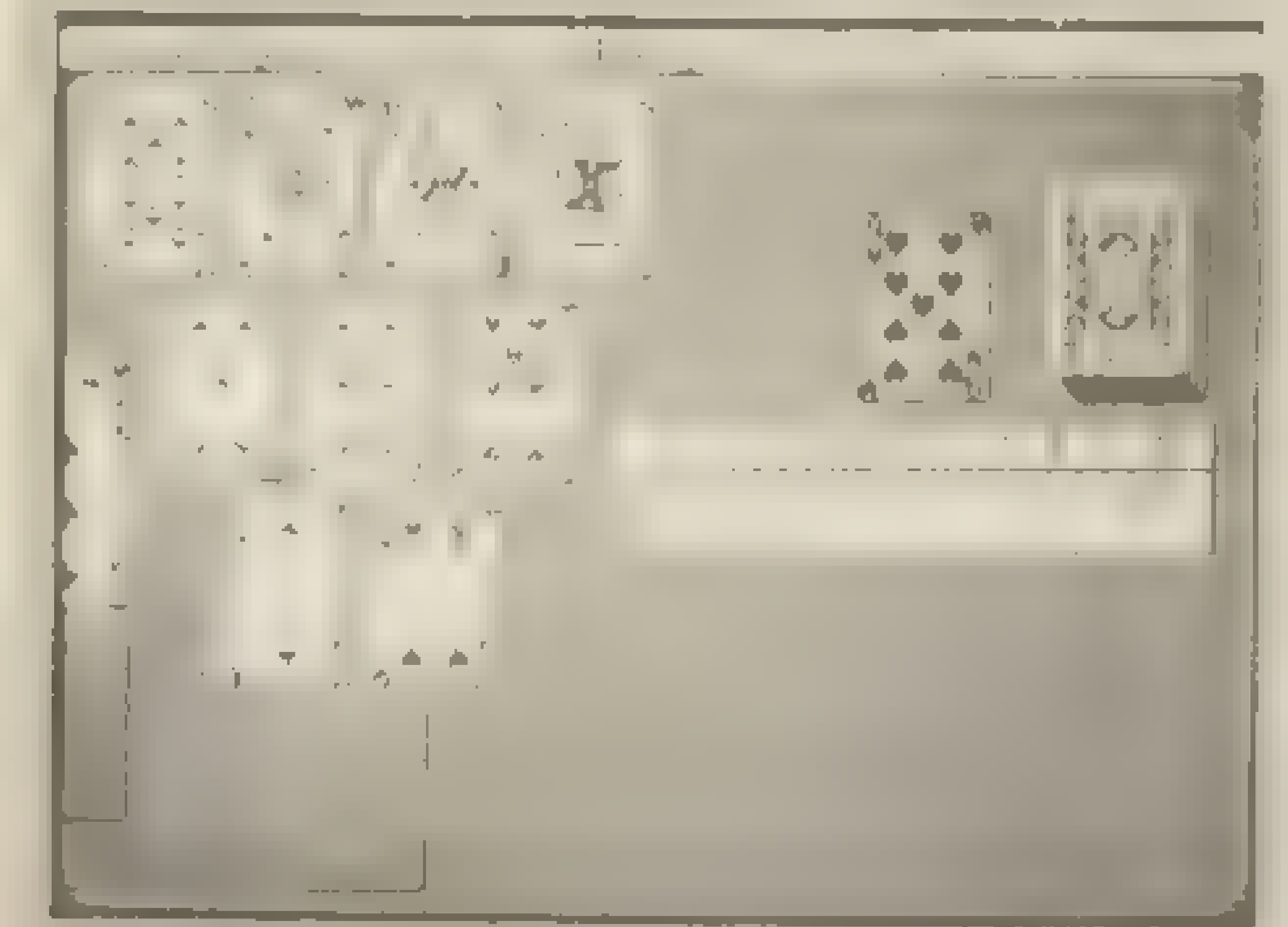
More details on these and other Bloc products are available from Software Toolworks on 044 486 545.

Simon Williams

SOLITAIRE

GAME of the WEEK

Sierra • £29.99



The full title of this game is the *Hoyle Book of Games Volume 2: Solitaire*, and this is indeed the official version, following the rules laid down in Hoyle's famous guide. It contains 28 games of patience, ranging from old favourites like Klondike, Pyramid and Canfield to two new games, called Slide and Bowling, invented by the programmer Warren Schwader.

Sierra is better known for its huge graphic adventure series, such as *King's Quest* or *Leisure Suit Larry*. This is not in the same league, coming with just one 3.5-inch disk (two 5.25-inch), rather than the dozen or so that Sierra fans will be used to. Nevertheless they will feel at home as *Solitaire* uses the same installation sequence and menu system.

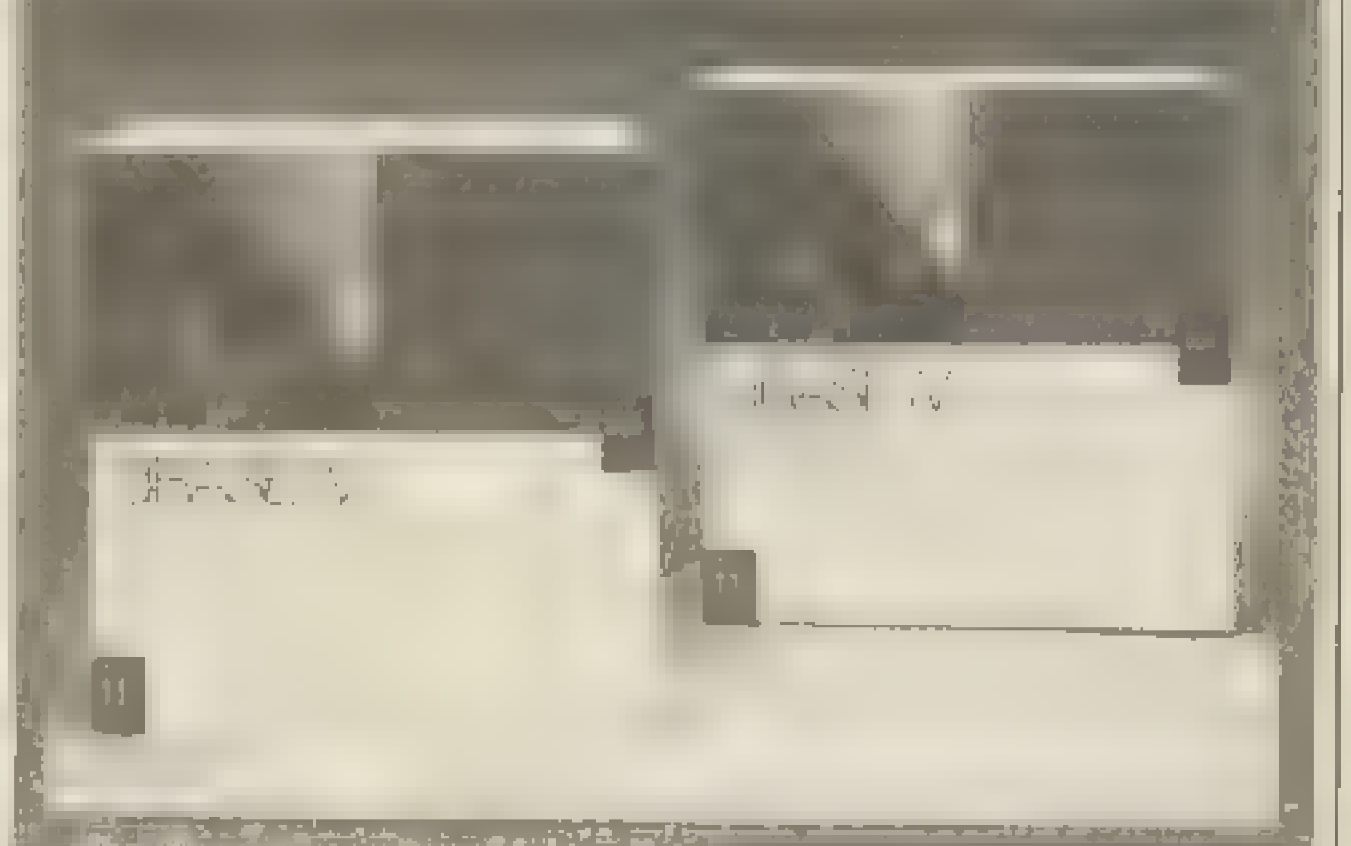
The opening screen allows you to choose the game and decide between 'easy' and 'hard'. The harder setting involves minor changes to the rules of each game which are all explained in the manual, or indeed in the pop-up 'rules' panel. Unfortunately in both cases the rules are explained rather too concisely, although it is usually fairly easy to work out what you should be doing.

The display is disappointing on colour EGA or VGA because, as with all its products, Sierra has gone for the lower 320 by 200 resolution display. Fans of the *Solitaire* that comes with Microsoft Windows will be particularly disappointed, as it looks nowhere near as good.

One thing Sierra does boast is that it can be run on a laptop, claiming 'the perfect way to pass the time during air travel!' It may cost at least 10 times as much as a pack of cards, but then I guess your laptop is less likely to scatter the cards all over the flight cabin at the slightest hint of turbulence.

Matt Nicholson

DBASE IV ADDS DECIMAL



The dBase [illegible] range [illegible] Ashton-Tate.

Ashton-Tate announced delivery of version 1.1 of dBase IV – [illegible] [illegible] and a faster [illegible] of dBase IV, Ashton-Tate's flagship product and the mainstay of its software business. The original dBase IV version 1.0 was criticised for a variety of bugs and for lacking [illegible] [illegible] [illegible] capabilities – a common problem these days (see Express 90's [illegible] about Amstrad [illegible] compatibility problems).

The new version has been heavily tested. Ashton-Tate claims it has had more tests – [illegible] million – than any other product released onto the PC market, having passed [illegible] before the new product is deemed ready for sale.

The main improvement is in memory usage. By recoding the overlay handling of the program, Ashton-Tate has reduced the main memory requirement to [illegible] minimum. This means the product will [illegible] [illegible] on networked machines without the need for extra memory.

If you do have expanded or extended memory in your system, dBase IV v1.1 can make use of it as a disk cache which reduces the number of disk accesses. [illegible] [illegible] [illegible] the program to [illegible] or memory usage to get the best of either world for a particular application.

The widely used Structured Query Language (SQL) available within dBase has been improved and is easier to use with [illegible] enhanced commands. Extra commands have also been added to the [illegible] language, including [illegible] [illegible] for turning the cursor on and off and setting the current directory, [illegible] [illegible] [illegible] [illegible] weren't implemented before.

The standard edition will [illegible] cost £684, [illegible] the developers edition (royalty free) is £1,029 and the [illegible] pack is £1,144. More information from Ashton-Tate on 0628 33123.

SPECTRUM

OUTLET PLUG

Here's another favourable plug to add to the no doubt considerable heap already collected by *Outlet*, an on-screen Speccy fanzine aimed at the serious user. The latest issue (number 35) has just reached me and it's another nicely presented eclectic mix of text and programs easily accessed, on disk at least, from a central menu.

The first appetizing thing Plus 3 owners will want to sample is *HIFORM* – a truly impressive program that somehow manages to make extra room on the unforgivably weedy and dashed expensive 3-inch disk. Formatting with *HIFORM* increases the capacity of said disk to a tumultuous, rippling, throbbing 203K per side! That's a whole 60K extra per disk and makes this outlet a veritable bargain for Plus 3ers.

The rest of the programs range from ecclesiastical clip art to a screen compressor routine to multi-channel renditions of Jean Michel Jarre's greatest hits, but the most impressive things on offer are *BROT* – a Mandelbrot set generator, *ANIMAL FORM* – a high speed drawing routine with a gallery of 24 animal pics and *EXPLODE* – a fun little demo showing things shattering apart into pixels.

That's quite apart from all the usual well -stocked regular sections covering letters, news, reviews, machine code programming and classifieds, so there's lots to read as well as load up. In short it's another interestingly varied issue presented with more professionalism than you'd expect to find in an independent mag but with a level of enthusiasm for Speccy using sadly missing from many shop-bought publications.

Outlet usually costs £2.75 plus the price of a tape, Microdrive cartridge or 3-inch/+D/Opus disk but I'm sure they won't mind if new readers take them up on a special offer recently advertised in this very mag which lets you have your first *Outlet* for £2.50 fully inclusive on any of the formats listed above. Contact Chezron Software, 605 Loughborough Road, Birstall, Leicester LE4 4NJ. A SAM version on disk and tape is also available!

DO YOU WANT TO KNOW A SECRET

Only the other week I was saying the Speccy is a wacky old thing full of secret little features and wrinkles not listed in the manual. Just in case you don't believe me here is a list of three zany things I bet you didn't know your usually placid Plus 3 is capable of.

1) There's a test mode built into the Plus 3 which checks joysticks, keyboard, printer, sound and just about everything else. To access it simply perform the following feat of keyboard gymnastics: Hold down BREAK while resetting the machine. A test card will appear on the screen and by presenting Q, A, Z, P, L, M simultaneously you enter the test proper. Remove any disk from the drive unless you don't mind it being formatted.

2) In Plus 3 BASIC type COPY RANDOMIZE and then ENTER. An error will result. Press ENTER again and immediately after press P, L, Z, C. Your reward for this complicated exercise in finger yoga will be the Plus 3 responding with "HELLO THERE I'M A +3".

3) Hold down BREAK while resetting to bring up the test card I mentioned above. Then press A, E, U down to access a rather groovy sound to light converter! Simply connect a cassette recorder to your machine in the normal way, insert the music tape of your choice and as long as it's not Cliff Richard produced by Stock, Aitken and Waterman the music will be accompanied by various pretty patterns.

Robin Alway

SAM COUPE

PUZZLERS

Geoff Winkless is puzzled by some SAM related things and has written to me looking for answers. Naturally I'm no help whatsoever and so it's up to you to prevent the hair tearing, deep depression and complete insanity confirmed by watching both showings of *Neighbours* in one day that will surely follow unless someone can answer the following:

Firstly what are the keywords USING, REF (Shifted F4), XPEN AND YPEN for? Secondly can anyone Poke the Spectrum tape loader on the Coupé to make it go slightly slower and decrease loading difficulties with SAMTAPE? Lastly, Geoff wrote an input routine that went:

```
10 LET a=PEEK SVAR 513:
  IF a=o THEN GOTO 10
20 PRINT CHR$ a: GOTO 10
```

This accepts eight inputs then stops and vanishes very spookily. Is [illegible] a ROM bug (Geoff is using the older version) or fault in the program? Only you can decide and send answers for any of Geoff's problems to me at Express.

MORE USER GROUPS

There are probably more user groups for the SAM than pieces of software at the moment, but in the meantime you could always sample some of the public domain on offer from Fastline. Apparently it's undergone a bit of a revolution since I last mentioned it and in the best traditions of MFI all prices have been savagely cut.

Each disk of eight public domain programs costs £2 which includes the disk, post, packing, poll tax contribution etc.

PD available at the moment includes a Mandelbrot set slideshow, a disk organiser and Connect Four game. If you want to join or donate some PD the address is 1 Ryelands Place, Kilgetty, Dyfed, Wales SA68 0UX.

Robin Alway

PCW

COME ON UNITED

"Always be careful when you get on a train in Germany," said the guard to us when we were travelling Inter-Rail through Europe a few years ago, "because they keep splitting and you can end up in the wrong half." "Just like Germany, really," my friend said. The guard was not amused.

But talking of Germany, Peter Röhricht [illegible] Raitenbach has written to me about the PCW in that country. He reckons that PCWs will take off there (which they haven't really up to now) as the two Germanys unite because the machine still offers the best value for money to the expanding market. Let's hope so; all PCW software so far has come from Britain, and the stimulus of a new set [illegible] buyers, all with varying needs, can only be good for the lamentably small PCW software catalogue.

LITTLE PIPS

More options you can put after a PIP command...

[E] Echo. Types out the contents of a file as it is transferred. Useful with PIP LST:=CON:[e]

[F] Filter form feeds. Takes out all the page ends in a document.

[Gx] Group. Specifies a group number x to copy to or from, eg. PIP M:[G3]=A:*.*[G6] copies from group [illegible] of A to group 3 of M

[H] Hex. Checks data for hexadecimal format file and reports errors.

PROTEXT ARCHIVING

A great time-saver for anyone who wants to keep backup copies of their text documents in *Protext* – which ought to be everyone!

Include PIP.COM on your *Protext* startup disk, or have [illegible] copied to [illegible] by putting COPY PIP.COM [illegible] in your STARTUP file. Then if you have:

```
[illegible]
[illegible]
```

in your STARTUP file, merely pressing [EXTRA] [illegible] in command mode will copy to the [illegible] drive [illegible] files that have been edited or in some other way changed since the last use of PIP...[a]. Then it copies all files from M to A but asks you to confirm with Y or reject the copy with N – letting you insert your backup disk meantime and also ensuring that things hanging around M like PROTEXT.SVS don't get copied. Finally it goes back obligingly into *Protext* for you.

HEATING SENSIBLY

[illegible] the heatwaves of summer you might just find that drives suddenly stop accepting disks. [illegible] it happens, don't panic; just move your PCW out of the light or draw the curtains. More than likely it's just [illegible] stray shaft of summer sunlight playing on the drive head and confusing it.

CHAR WOMAN

What's the most exotic use of *LocoChar*, the program that lets you design your own *LocoScript* characters, that anyone's come up with? A stonking prize for the best entry. To get you going, a Japanese friend of mine living in the UK with a PCW has put her own name in *LocoChar* to save her writing it out.

Rob Ainsley

MSX

THIRD TIME LUCKY

Several times recently I have heard rumours about an MSX 3 computer, and the more I hear, the more believable the story seems. Not only have my contacts in the UK and Europe mentioned the possibility of such a machine, news has already reached these shores from Japan, the home of MSX.

Of course, in true Japanese fashion, the ASCII Corporation is saying nothing, but I have a sneaking suspicion that if MSX 3 is launched, it will be a machine that will not only run MSX1, 2, and 2 Plus software, it will also be a full blown PC compatible. Just think of it, not only would you be able to play all those brilliant MSX 2 and 2 Plus games, using the faster processor, you could use the graphic capability of the MSX 2+ with the speed of a PC. This would certainly be a machine of potential. If this story turns out to be much more than [illegible] rumour, then *Express* is sure to be the first with the news.

ALIVE AND WELL

It's good to hear the user groups who support MSX in the UK are alive and well. Two of them have recently been in touch, and both have promised to send me items of software for evaluation. Firstly, *NETWORK*, the alternative magazine for the MSX user has in its possession [illegible] cartridge-based utility called The FM PANA Amusement Cartridge (FM PAC for short). Now [illegible] the features that are available using this cartridge are yet to be ascertained, but the most used part of its abilities must be its sound and music capabilities. I believe that nine channels are available for sound reproduction, you thus have the sound capabilities of an MSX [illegible] Plus computer. When it arrives I'll review it.

The second group to contact me this week was MSX Link, and the news is that it now has a version 4 of *CAD* available. This is an MSX 2 graphics program, and [illegible] supplies on 3.5-inch disk with English instructions. MSX Link is selling this for the giveaway price of £5.00 inc p&p. Therefore if you wish to purchase a copy, send [illegible] cheque or P.O. to MSX Link, 11 Ascough Ave, Spalding. Thanks to the user groups for their help, I couldn't do this column without you.

GAMES OUT

Onto the software scene now, and even at this quiet time of year we find games coming out for the MSX user. The latest release is Tenegan/Domark's *Klax*, and [illegible] this game has been given rave reviews on all the other formats, I cannot wait for a review copy to arrive. If it is as good as they say it is, this maybe the last column for some time. Getting addicted to games is terrifying isn't it?

Quite a while ago someone sent in a tip for *Elite*, and as it was ages since I had played this game, I thought I would load it up and try out their suggestion. If you have not yet acquired the docking computer when you have aligned your ship with the port on the space station, use maximum speed, and the ship docks every time. I just can't understand why I didn't think of this myself, as my wife uses this technique every evening to put the car in the garage.

Keith Neal

CPC

LOTUS FLOWERS

We haven't heard much from Gremlin since *Impossamole* appeared on the CPC – yet it appears the lads from Sheffield have been busy. My spies tell me they've been seen hanging around the Lotus factory in Hethel, in fact…

Just as my investigations were about to reveal Gremlin's secret, a mysterious package appeared on my desk. [illegible] was an invitation to the launch of Gremlin's major new licence – and, surprise surprise, the launch was to be held at Hethel.

Hethel, for those who don't know, is not far from Norwich, a city remarkable for (a) hosting that old classic *Sale of the Century*, with Nicholas Parsnips and (b) for being served by some of the most dismal, congested, single-carriageway A-roads the world has ever seen. The journey from Bath took four and a half hours, but thankfully the hotel rooms had showers and the bar was open. (For lemonade, obviously.)

Next day it was off to the Lotus factory for the official unveiling of *Lotus Esprit Turbo Challenge*, a race game pitting you against a load of other Lotus drivers competing on a range of courses. The difference is that you get a split-screen view so that two players can play simultaneously. Seeing your opponent hovering tantalisingly on the horizon is one of the best incentives I can imagine for keeping the pedal on the accelerator and off the brakes that teensyweensy bit longer…

The mechanics of the game are that you have three difficulty levels to choose from, each offering a number of races. Level one has seven different venues, level two ten and level three 15. That gives a total of 32 different tracks. To make it to the next race on each level, one of the players must finish in the top 10.

The courses feature hills, curves, hairpins and straights. There are up to 20 other (computer-controlled) cars on the circuit at the same time, and you can further define the difficulty level by selecting either manual or automatic gearbox. And a further dimension is added by the pitstops that occur at various points in the race. You don't get a choice about coming in, but you do decide how long to hang around and therefore how much fuel you take on board…

The bad news is that the CPC version isn't finished yet (though the screen shots look promising); the good news is that the Amiga version is, and *Challenge* on that machine is extremely fast and extremely playable. We wait with bated breath.

As a final treat, all the journos were invited to have a drive around the Lotus test track in either a new Elan or an Esprit Turbo, with a Lotus driver taking you on a demonstration lap afterwards. I succumbed to the charms of the Elan, a 160bhp open-top two-seater. Much burning of rubber, clipping of apexes and twirling of wheel later, Lawton emerged grinning like an idiot. Ah, the things we journos have to to…

CES LATEST

Those considering going to the Computer Entertainment Show at Earls Court (September 15 & 16) may be interested to know that many TV stars will be turning up to support the Childline Charity. (The show's organisers are hoping to raise some £50,000 from handing over a proportion of each ticket sale.) And if you want 50p off your ticket, see *Amstrad Action*'s September news pages for a coupon.

Stars attending will include Esther Rantzen, among others. (But I wouldn't let that put you off.)

THRILLED PHIL

Phil Bowman of Harlow is very pleased. "You saved my bacon!" he says. Not having the faintest idea what he was talking about, I read on.

"I came within an inch of buying a PC a couple of months ago, and getting rid of my trusty old 6128. It was all because everyone told me the CPC was outdated and underpowered – PCs were the only things worth having now. And you know, I almost believed it – especially when I checked the prices in *Express*. £300 for an MS-DOS machine when a 6128 costs £400? Amazing! And of course, I could then swap disks with the machines at work…

"But then I sat down to work it all out. For £300 I'd only get the machine itself. I'd need a monitor too. Better stick on another £100 – we're back to CPC territory already. Hang on again, though – if it's going to be better than my CPC I'll need colour. OK, make that a couple of hundred for the monitor. But what's this, another catch? Yup. CGA is crap, I'll need EGA at the very least. Suddenly PCs don't cost £300 any more. I lost interest when the total hit £600, but still there was still this nagging feeling that I should upgrade… until I read about CPC to PC file transfer programs in issue 88 (I've already got a second drive). Result? Complete compatibility with grotty PCs (I only ever want to transfer text files anyway), a vast library of brilliant games at a price even a Junior Clerical Officer can afford and a poke in the eye for PC snobs. (I've got *Protext* on ROM, y'see – try getting *Wordstodge* 6.5 on your PC to load in under a second!)

"If all this sounds a bit head-in-the-sand, I realise that one day I may still have to sell Arnold and go for a boring old PC, but that won't be for a good while yet!"

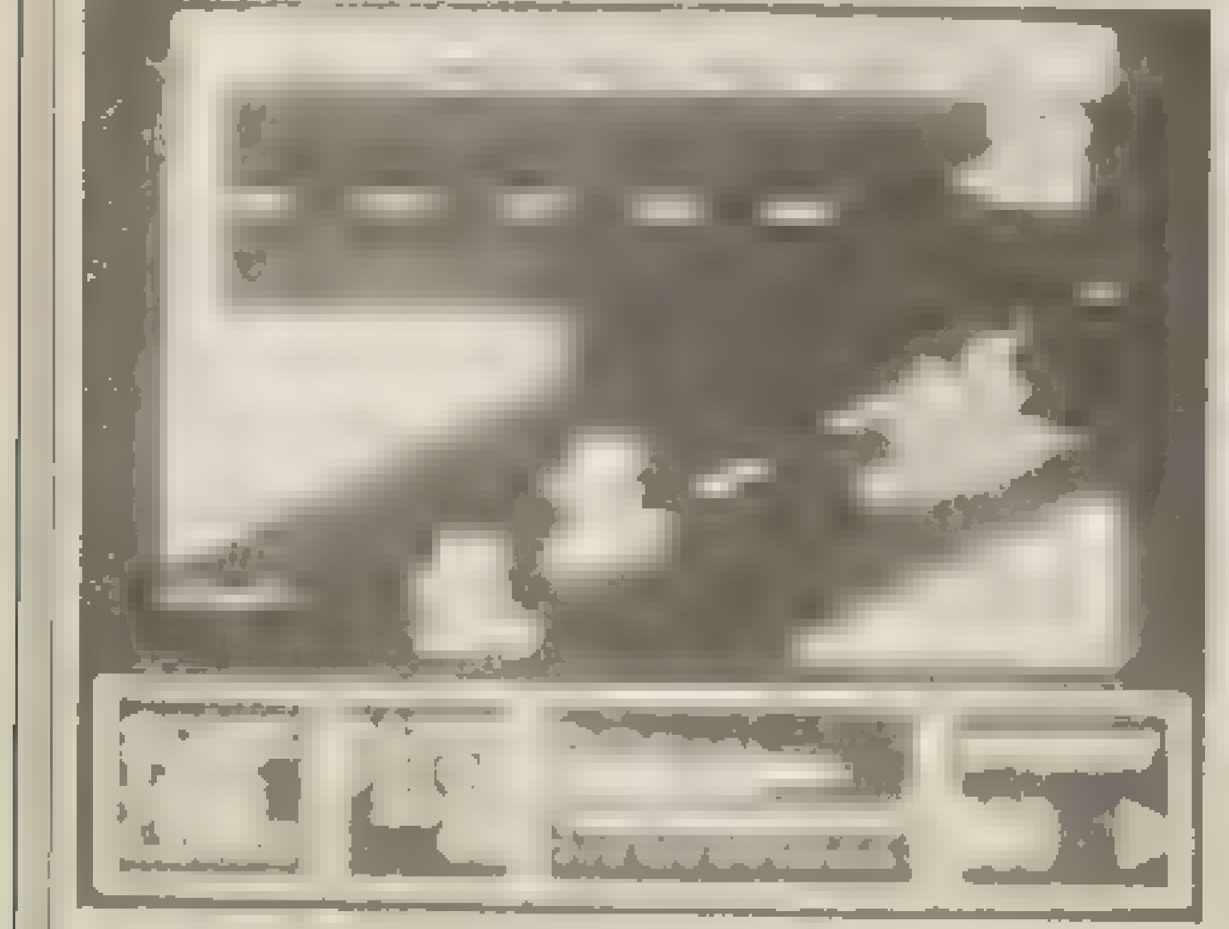
Rod Lawton

BACK TO THE PAST

Hmm – I could be in a minority, but I never did like *Back to the Future* (the film). Mind you, *Back to the Future* (the game) was even worse. Surely Mirrorsoft would make sure that the licence to the sequel was in a different league to its grim predecessor?

First, though, the plot. In the game of *BTF2* you follow the now-familiar film tie-in formula [illegible] acting out certain key scenes from the film. In stage 1 you (as Marty McFly) must guide your hoverboard through the streets of Hill Valley [illegible] the Town Hall. However, bad guy Griff and his evil henchmen are also out on their hoverboards, and they mean to stop you. As do old folks with deathwishes who step blindly off pavements, and a host of other awkward objects. Cars appear from nowhere to run you down, too, although if you're quick you can (in theory) grab their bumpers as you go past for a free ride.

Level two is a viewed-from-above logic puzzle where you must open the right doors at the right time to let Jennifer out of her house without bumping into, amongst other things, including a previous version of herself (or is it future version?).



• Back to the Future 2 – it plays like it looks.

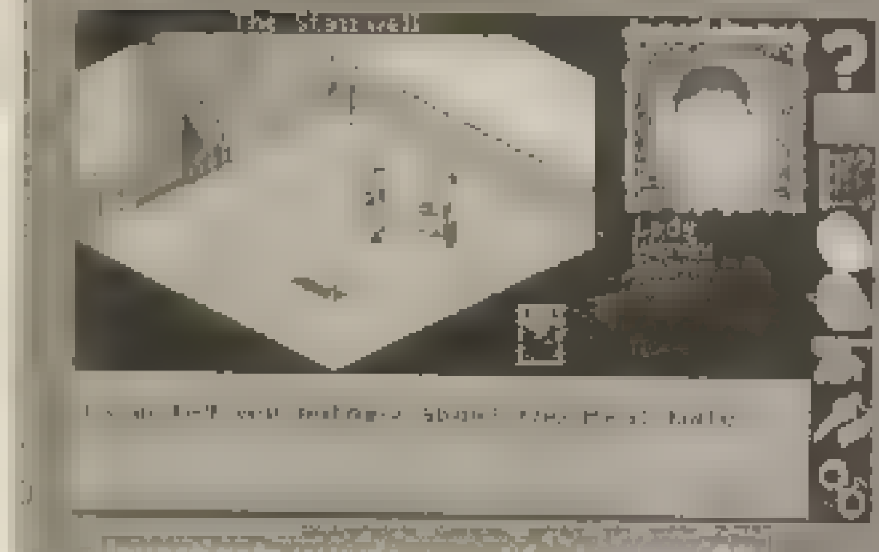
Level three is different again. This time you're walking along the road tackling various opponents with a range of martial arts moves. Your objective this time is to make it to the DeLorean.

Level four is a curious sliding-block puzzle where you have to shift the squares around to form a picture. Finally, Level five takes you back to the streets of Hill Valley where you must race to find a mysterious almanac before Biff does, at the same time as keeping away from the police.

Well, it seems comprehensive and varied enough, but just wait 'till you get through the animated title sequence. You see the graphics on level one are Speccy ports of the worst calibre – i.e. black and white. It plays like a dog, too, with sluggish joystick response, uncertain collision detection and feeble scrolling. Ouch.

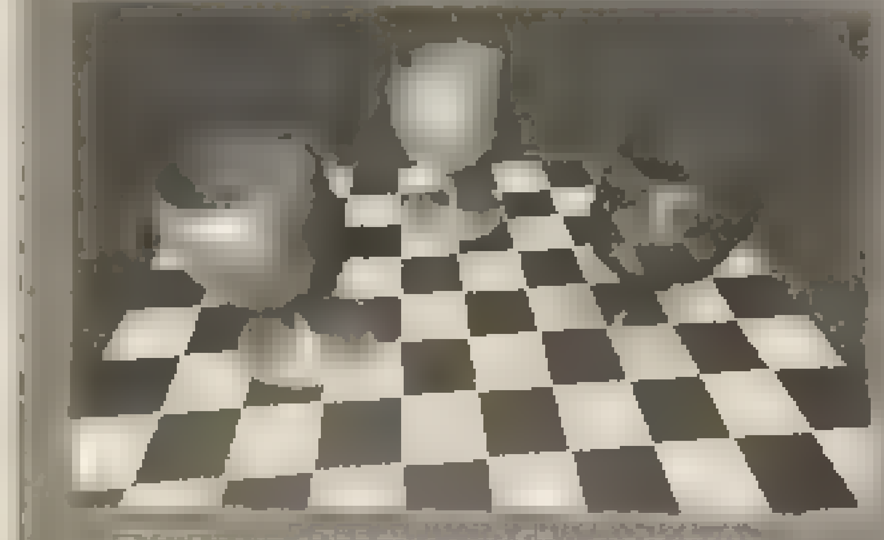
The same applies to levels three and five – both mono, both straight from the Speccy. The other two levels are in the CPC's 16-colour mode, but are really no more than sub-games.

The whole game is hugely disappointing. You might have thought that Mirrorsoft would have taken the licence seriously, but somehow, somewhere, it's all gone drastically wrong. Basically, it would make for a disappointing budget game, but at £9.99 on tape, £14.99 on disk, it ain't no budget.



Investigate murder most foul on [illegible] ST.

ST 10
PC 11
Spectrum 12
SAM Coupé 12
PCW 12
MSX 12
CPC 13
QL 14
BBC 14
Archimedes 14
C64 14



Rendering is easy with a new package.

Amiga 16

C64

CONVERSIONS

Computers, being contrary beasts at heart, like to work using the counting system known as hexadecimal, whereas we mere mortals are more used to the decimal system. Decimal, as you know uses a base of 10, while hexadecimal uses a base of 16, and switching from one to the other can sometimes be a mite confusing. So these two little listings should sort you out. First if we have a decimal number stored in the variable D, the hexadecimal equivalent can be found stored in the string variable H$, using this:

```
10 IF ■ THEN A=INT (D/16):
H$=MID$("0123456789ABCDEF",
1+D-A*16,1)+H$:D=A: GOTO10
```

Secondly, if H$ now contains our hexadecimal number, the decimal equivalent can be found and stored in the variable D using this:

```
10 D=0: IF H$>"" THEN FOR I=1
TO LEN(H$):
A=ASC(MID$(H$,I,1,))-48
:D=D*16+A+(A>9)*7:NEXT
```

An old requirement perhaps, but you might find the programming of interest.

DIVERSIONS

Something I once saw, which you may find a use for, involves video recorders and your C64. If you want to put a title on a video of, say, a wedding, or you on holiday, or a film that you're lending to someone and you want to make sure they know whose tape it is, then here's how. Design your title page using the 64, just as you would design any other graphic screen, and make sure the tape is in the video and rewound back to the correct position (the start probably). Set the video to the channel you use for the computer (9 in my case), and just start it recording for a few seconds. Easy when you know how, isn't it?

SORRY TO INTERRUPT

Following on from our discussion on interrupts from a few weeks ago, why not try writing a program that makes use of the (largely ignored)function keys?

Check location 197 to find out which key has been pressed, location 653 to see if the shift key is being used, then if you want F1 to be `RUN <RETURN>` you could put the appropriate ASCII values for R-U-N and RETURN in the keyboard buffer (location 630 onwards), put the number of characters (4 in this case), into location 198, and Bob is more or less your Uncle.

ANOTHER BOOK

I seem to be awash with books about the C128. Repairing them last week, and now *Advanced C128 Graphics And Sound Programming*, published by John Wiley and Sons. Over 400 pages of quality material, it's well worth tracking down.

Pete Gerrard

QL

ESSEX LADS

The Essex QUANTA sub-group is holding a workshop on Saturday September 1. The venue is Rayne Village Hall, Gore Road, Rayne, Essex. Rayne is on the A120 between Great Dunmow and Braintree. Contact Ron Dunnett on (0376) 42052 for further details.

Being virtually on Digital Precision's doorstep, I would expect Freddy Vachna, Mr DP, to be in attendance, with a plentiful supply of software. TF Services and Adman Services usually turn up at these events also.

QUANTA members are a very friendly bunch of people, so a good time is virtually guaranteed, even if you don't belong to the group.

MINERVA UPGRADE

I've just heard that version of 1.82 of the Minerva QDOS replacement ROM has been released by the Qview International Megacorporation. Qview hangs out at 29 Carnaby Close, Godmanchester, Cambs, PE18 8EE. Tel: (0480) 412884. I'll see if I can get some information on the new features in next week's issue.

OVERHEATING

At this time of year, many users find their QL starts misbehaving because of the heat, especially if they had added disks and expansion memory. The QL, being a very compact machine, a rather prone to heat related problems at the best of times. The symptoms are crashes and lock-ups, and a reduced Microdrive reliability.

If you do find the heat affecting your machine, ensure that the feet are fitted, as this improves the air circulation through the machine.

Open the machine up and check that the screw securing the voltage regulator to its heat sink is nice and tight and put some heat sink compound on the regulator – Sinclair didn't bother to do this. Substituting a 1 amp regulator for the titchy 0.5 amp device also often helps.

MODEL RAILWAY CONTROL

A friend recently asked about the best way to use a QL for model railway control. After a bit of head scratching, I decided that the simplest way and cheapest way was to connect a chip called a Universal Asynchronous Receiver/Transmitter or UART, to one of the QL's serial ports.

A suitable device is the 6402 which costs about £5. Also needed is a crystal for the baud-rate clock, a couple of RS-232 level converter chips, and a few transistors and resistors to buffer the outputs – say £20 in total, including a suitable prototyping board.

The UART chip gives eight input lines and eight output lines – more than enough I/O for a simple model railway layout. The circuit is quite simple to build, and we should have it working properly in a week or so. I'll let you know how we get on.

John Torofex

BBC

HOT STUFF

As temperatures and soft drink sales soared, software sales plummet, at least that's conventional wisdom. The result is a spate of price cuts and special offers designed to move stocks out of the door. So, is this a good time to snap up some good stuff on the cheap? The answer is of course, 'that depends on the type of software and the software house's policy over old software'

For example, if you fancy a game from Superior my advice would be to wait a month or so as it tends to release compilations in the early autumn. On the other hand 4th Dimension has not done much in the way of compilations recently, so you should take advantage of any offers going. Serious applications are different again, but as they usually have a longer shelf-life than games, discounts are thinner on the ground.

UNSUITABLE FOR CHILDREN

It has often been said that the BBC micro is unsuitable for use in schools. Why? Because they say it is not IBM compatible, doesn't represent real computing as found in the business world. I feel compelled to defend Acorn and its range of computers.

While at school, students are given a wide variety of subjects to look into but no specialised training. Computers are often used as tools to help in this. As long as the lesson is understood it does not matter which computer is used. The software is more important than the hardware.

Andrew Brown

ARCHIMEDES

PRM

The *Acorn Programmers' Reference Manual (PRM)* is not, in fact, a single manual, but a suite of four spiral-bound volumes each running to around 450 pages. This all adds up to over 1,800 pages of hard technical information on hardware and software. Though the bias is towards programming and ARM assembler in particular, there is necessarily quite a bit of detail on the ARM chip set as well.

The PRM goes through every * command, OS_Byte and OS_Word call, as well as SWIs, events and buffers. It also covers all the filing systems, the window manager and the supplied system extensions. Appendices detail ARM assembler, file formats and other standards.

A completely separate catalogue lists indexes – Acorn being Cambridge-based insists on 'indices' – of all supported * commands, OS_Bytes, OS_Words and SWIs. All in all, this is an excellent set of manuals, though with a distinct techie leaning.

Some have said the *Programmers' Reference Manual* should have been included with the Arc. Those who have seen the volumes know there are comparatively few users who will need to get at the machine at this level. For those who do, though, the £79 asked will be money well spent.

HARD DISK TO GO

Hard disks continue to be highly priced on the Arc, a good 50 per cent higher than prices in the PC market, for instance. An area where the difference is not nearly so marked, though, is removable hard disks. Until now, this has been mainly due to lack of product, but a new drive from Science Frontiers is due soon and will offer a 45Mb cartridge drive for £699. This is no slow bernoulli device, either. It has an access time of around 20ms and a tough external case to the disk, tested in hikes through the highlands of Scotland!

Anyone wanting to take advantage of the drive will need to add a SCSI podule to the Arc, but with that out of the way, you should be able to add a further 45Mb cartridge for about £75 or so. Full details are not yet available, but will be reported as soon as possible. In the meanwhile, Science Frontiers can be found on 0224 642765.

ANOTHER MOAN

OK, I've just received a copy of the *Programmer's Reference Manuals* from Acorn, but I haven't committed them all to memory yet. The solution to the following question, which has bugged me since I first invested in an Arc, may be in there somewhere, but I haven't found it yet.

Why, on a machine as sophisticated as the Arc, does the text file viewer scroll text past the eye in a miniscule window when you click on a help or documentation file?

Surely the default should be to display a page at a time, with keystrokes to scroll text up or down by a page, not [Ctrl][Shift] to pause scrolling. The page-by-page method is used on the ST and is there as an option for it on the PC.

It would also seem quite possible for the viewer to assess the line length of the file it was displaying and adjust the viewing window automatically. At the very least it should default to 80 columns so any text file can be displayed with unbroken lines. Has anyone got a patch which corrects things?

REDSHIFT

Minerva Software, obviously still craving the title 'Most new Archimedes releases in a year', has launched another Arc game, called *Redshift*. Decoding the press release provides the following information

You have to regain control of eight worlds (there are eight levels) taken over by the seventh colony (there are lots of invaders). Your ship is equipped with triple laser banks (there's a lot of shooting), anti-matter turbo drive (it's a scrolling game) holomap terrain scanner (probably viewed from above) and solaray energy inductors (being hit loses you energy).

To recapture the worlds you must destroy all ground level machinery (told you there was a lot of shooting) and avoid the hoards of small fighters (don't forget, there's a lot of shooting).

So it would appear Minerva has released an eight-level scrolling shoot-'em-up for £17.95 plus VAT. I look forward to seeing a copy of it!

Bertrum Carrot

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AMIGA

AT POWER FOR £200!

Just when you thought it was safe to take the plunge and buy yourself a PC emulator card for your Amiga, Silica Distribution has stunned the Amiga industry with the launch of a sub-£200 PC emulator card based around the fast Intel 80286 processor which is at the hart of an IBM PC AT.

The ATonce board was developed by the German hardware producer Vortex, a company which is probably better known to Amiga users for its extensive range of Amiga hard drives. Not only is ATonce more powerful than the current range of PC emulators available for the Amiga, it is also substantially cheaper. Even its closest rival, Bitcon's PC Power card, is £200 more expensive.

Using state-of-the-art surface mount technology, with gate array logic, Vortex has managed to drastically reduce the number of components required, making ATonce not only cheap, but also very reliable (fewer components means less chances of failure).

Unlike Bitcon's Power PC card, the ATonce card fully supports the Amiga's multitasking environment. Once fitted, you can then run both Amiga and PC software concurrently within different screens – try doing that on any other computer! *(You can do it on the Macintosh actually Jason – Ed)*

The board fully supports the vast range of PC software available, including such modern applications as Windows 3.

The 'L' shaped ATonce card fits internally to all Amiga models. Installing it shouldn't provide too many headaches for any Amiga literate users: all you must do is to open your Amiga, unplug the 68000 from its socket and replace it with ATonce. The 68000 is then 'piggy-backed' on to the ATonce board.

At this kind of price, I can see Silica's unit cleaning up the Amiga PC emulator market. After all, who's going to pay £400 for Bitcon's Power PC board when you can buy a 286 card for half the price? As for Commodore's PC Bridgeboards, forget it.

The Amiga version of ATonce is still in development but SDL hopes that it should be available on the first week of October. For more info, contact Silica on 081-309 1111.

VIRUSX 4.1 LAUNCHED

It seems that software is falling over left, right and centre on the new A3000. The latest program to receive the old 3000 treatment is Steve Tibbet's acclaimed Amiga virus killer, *VirusX*. Although the program would appear to run without a hitch, *VirusX* failed to warn the user whenever an infected disk was inserted into the machine.

The problem (once again) was put down to the bugs within the Workbench 2.0 shell (as reported in last week's *Express*) that stopped many programs from successfully opening requesters,such as the one that *VirusX* displays to warn you whenever a virus is encountered.

The good news is that not only has Steve solved the problem, but he has also developed a new version that takes full advantage of the extra facilities offered by Workbench 2.0.

VirusX 4.1 will happily run on any Amiga (regardless of Workbench and Kickstart version) but the program is happiest when run under 2.0. Contact your local PD library for a copy of this definitive virus killer.

Jason Holborn

MONTY PYTHON

AMIGA GAME of the WEEK

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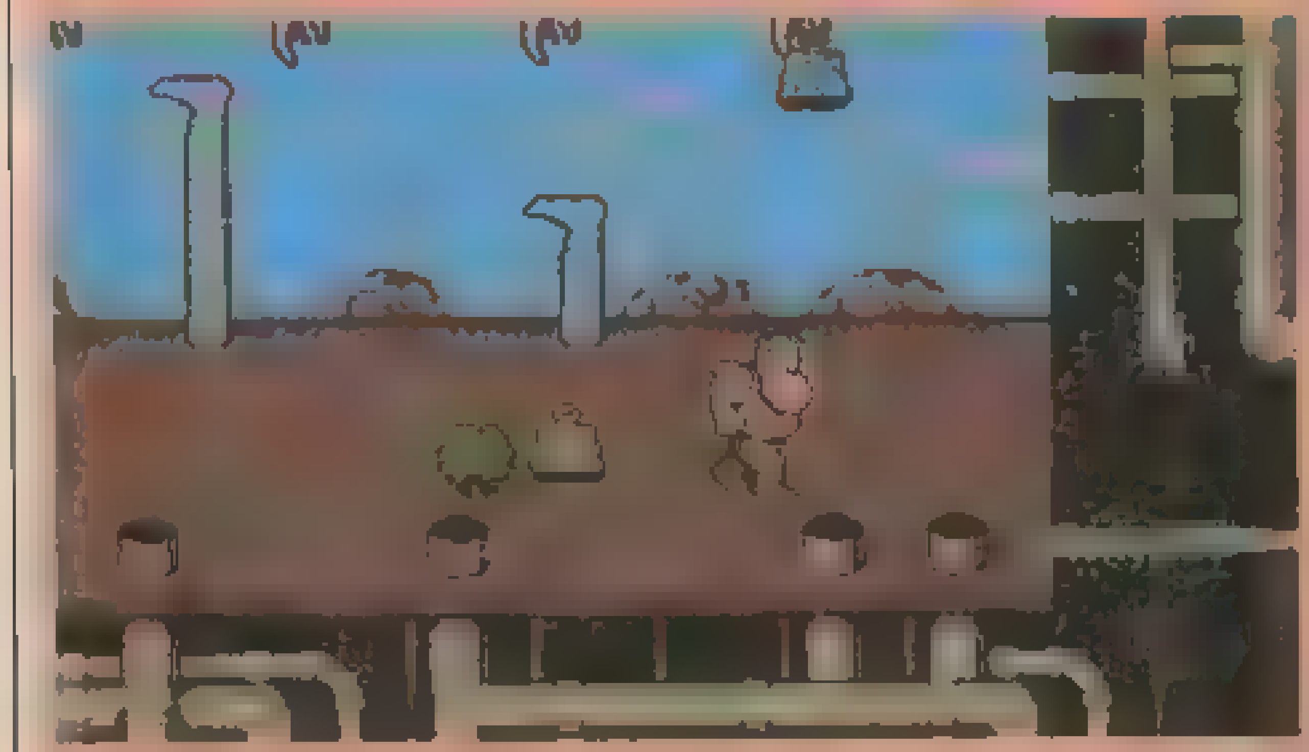


Some things lend themselves well for licensing and game conversions, such as sci-fi films, action comics and arcade games. Others are more unlikely, such as *Book at Bedtime*, the Pope and comedy shows. Core Design has taken a brave task upon itself by converting one of the strangest TV shows of all time – *Monty Python's Flying Circus* – which by all accounts should fit into the latter of the two categories mentioned earlier.

The game pits you as flower-arranger and knotted hankie-wearer extraordinaire – D P Gumby. Gumby's brain has made a daring escape, fleeing into the wide world to make its fortune. Gumby decides that he can't do without the old grey matter and decides to chase it down.

The only way to coax it back is to tempt it with that king of tinned luncheon meat – Spam. Gumby must negotiate a series of levels, some of them in the guise of that mystical fish, the Gumby-headed halibut, flinging fish to destroy enemies and destroy scenery in an attempt to find enough Spam to tempt back his brain. Along the way he comes across some favourite adversaries as the deadly hamster, Eric the Half-a-Bee, vicious keep left signs and the Spanish Inquisition (ooh, I didn't expect the Spanish Inquisition! Noooobody expects the Spanish Inquisition).

At the end of the level, Gumby regains his brain in time for an argument, where he must contradict the Minister for as long as possible for a bonus, then go back to Mrs Gumby to count up the food he has collected.

Along the way, Gumby may stray into one of the side exits, where his head is placed on a bouncing foot and he must bounce around a hidden bonus screen to find extra Spam.

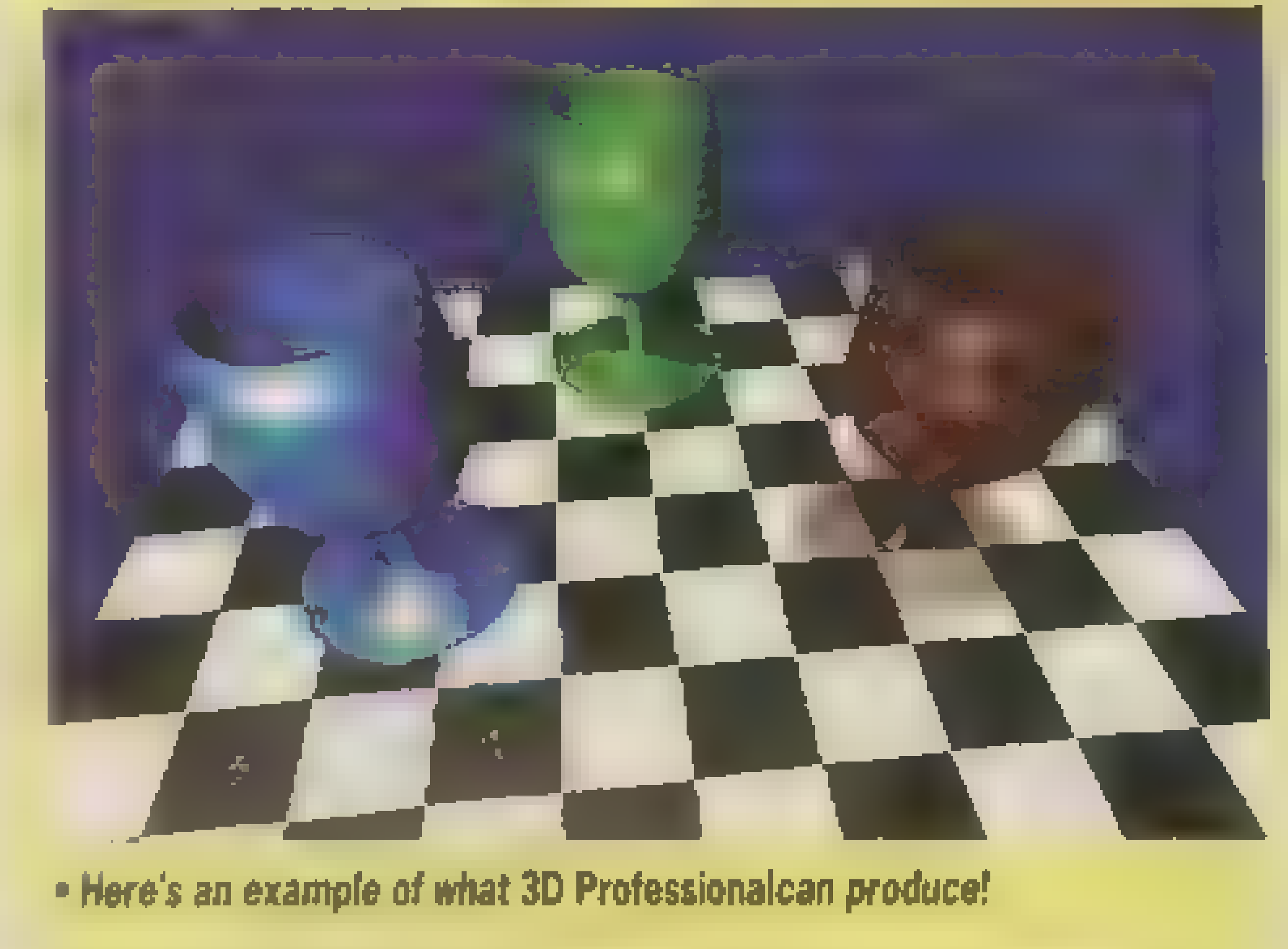
Core has managed to construct a game that wholeheartedly captures the zany sense of humour of the original TV program, complete with the odd skit that pops up in the middle of the game for no reason. The graphics have been taken directly from the original Terry Gilliam cartoons and the sound has been sampled from the shows themselves.

But the game isn't just a collection of Pythonesque graphics and sketches, there is a remarkably playable platform game cum shoot-'em-up in there as well, with some rather devious puzzles and obstacles to keep players plugging away for weeks.

Even if you're not a *Python* fan, this game is still worth checking out for its own sake. If you are a fan however, get hold of a copy as soon as possible and relive those golden sketches.

Maff Evans

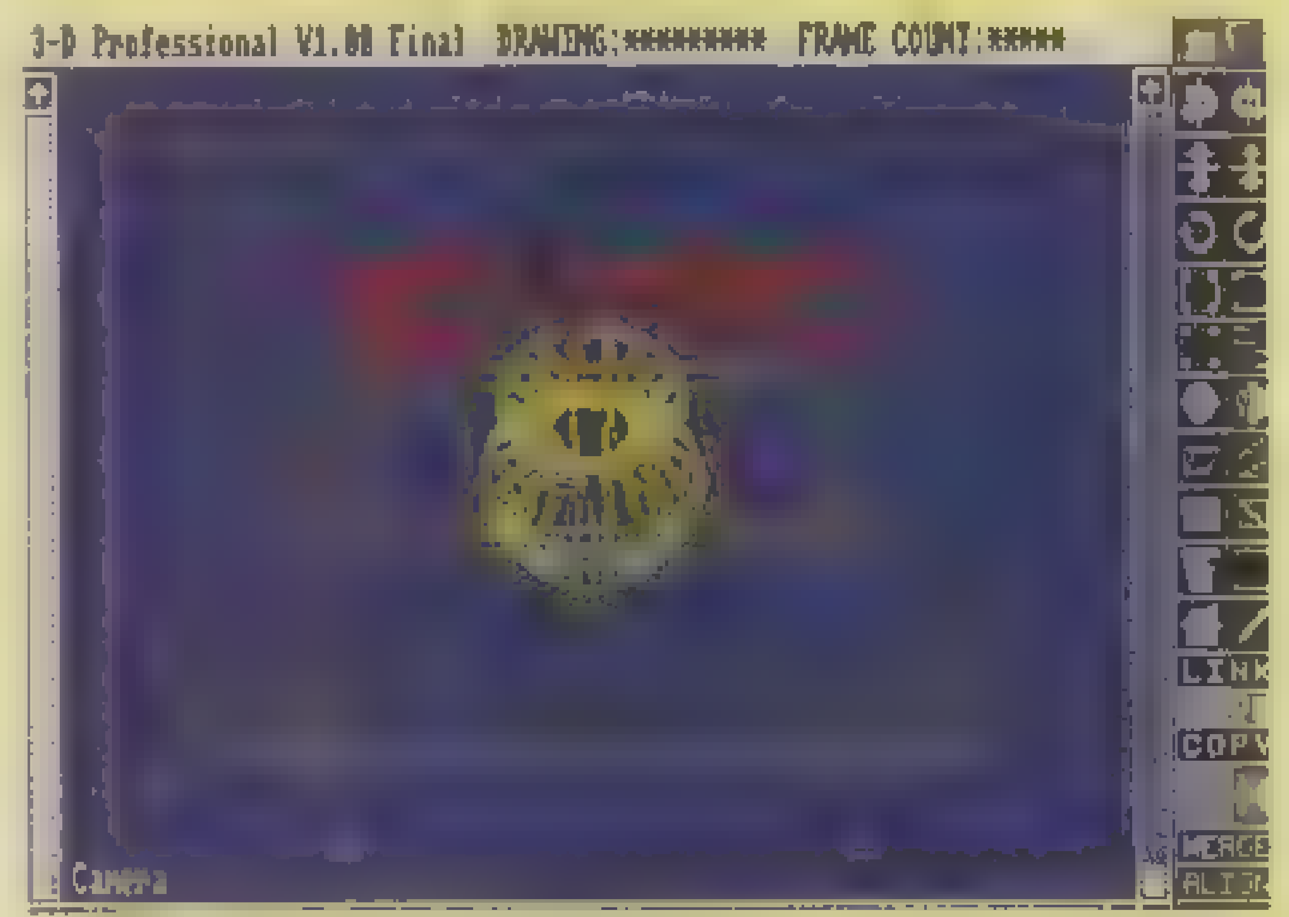
3D MADE EASY



• *Here's an example of what 3D Professionalcan produce!*

3D ray tracing is one of those applications that really sets the Amiga apart from its main competitor, the Atari ST. Even though such packages have been developed for the dear old Atari, they can never hope to match the power of such packages for the Amiga. Until recently, the bug name in ray tracing on the Amiga was *Sculpt Animate 4D*, but now a challenger has arrived, in the shape of Progressive Peripherals and Software's *3D Professional*.

3D Professional is a powerful rendering and animation system that matches *Sculpt* in every department while still managing to deliver a few new features of its own. As well as the usual range of object editing tools, *3D Pro* offers fractal tools for the creation of both landscapes and even trees. When rendering, you can output to 24-bit frame buffers, to PostScript and even to Commodore's new A2024 high-resolution mono monitor. For users of Haitex's *X-Specs 3D*, *3D Pro* will even produce stereoscopic images for use with these little wonders.



3-D Professional V1.00 Final DRAWING:********* FRAME COUNT:*****
LINK
COPY
MERGE
ALIGN
Camera

• *The 3D Pro scene editor in action.*

Scenes are built up within *3D Pro's* object editor by combining primitives to create larger objects. The program offers a range of primitives such as cubes, spheres and even more obscure objects as the torus and helix. For the ultimate in object creation, *3D Pro* offers three new object creation tools – lathe, conic and profile.

Lathe allows you to 'spin' objects just as you would when using a real lathe. Conic and profile allow you to produce extruded objects simply by defining a cross section of the object. Within minutes (rather than hours), highly complex objects can be created with ease.

Ever wanted to include text within your scenes? Well now you can with *3D Pro's* extensive extruded text controls. Using standard Amiga bitmapped fonts, text can be pulled into your creations.

The real power starts to show with object control. You can easily define the amount of transparency of an object, its roughness, glossiness and even the index of refraction for clear objects. The program includes nine preset settings for common materials such as plastic, chrome, glass and stone. If this wasn't enough, you can even apply textures such as wood, marble and brick with a single click of the mouse left mouse button. How's that for object editing power!

Rendering is pretty impressive too. Even when using either phong or guorad shading (which help to smooth out the rough edges around an object), scenes are rendered in a fraction of the time they would have taken with packages such as *Sculpt*. Even on a standard 68000-based Amiga, complex scenes are often rendered in a matter of minutes.

3D Pro is without doubt the most impressive Amiga rendering package available. No other program offers the kind of extensive range of features and options that *3D Pro* boasts.

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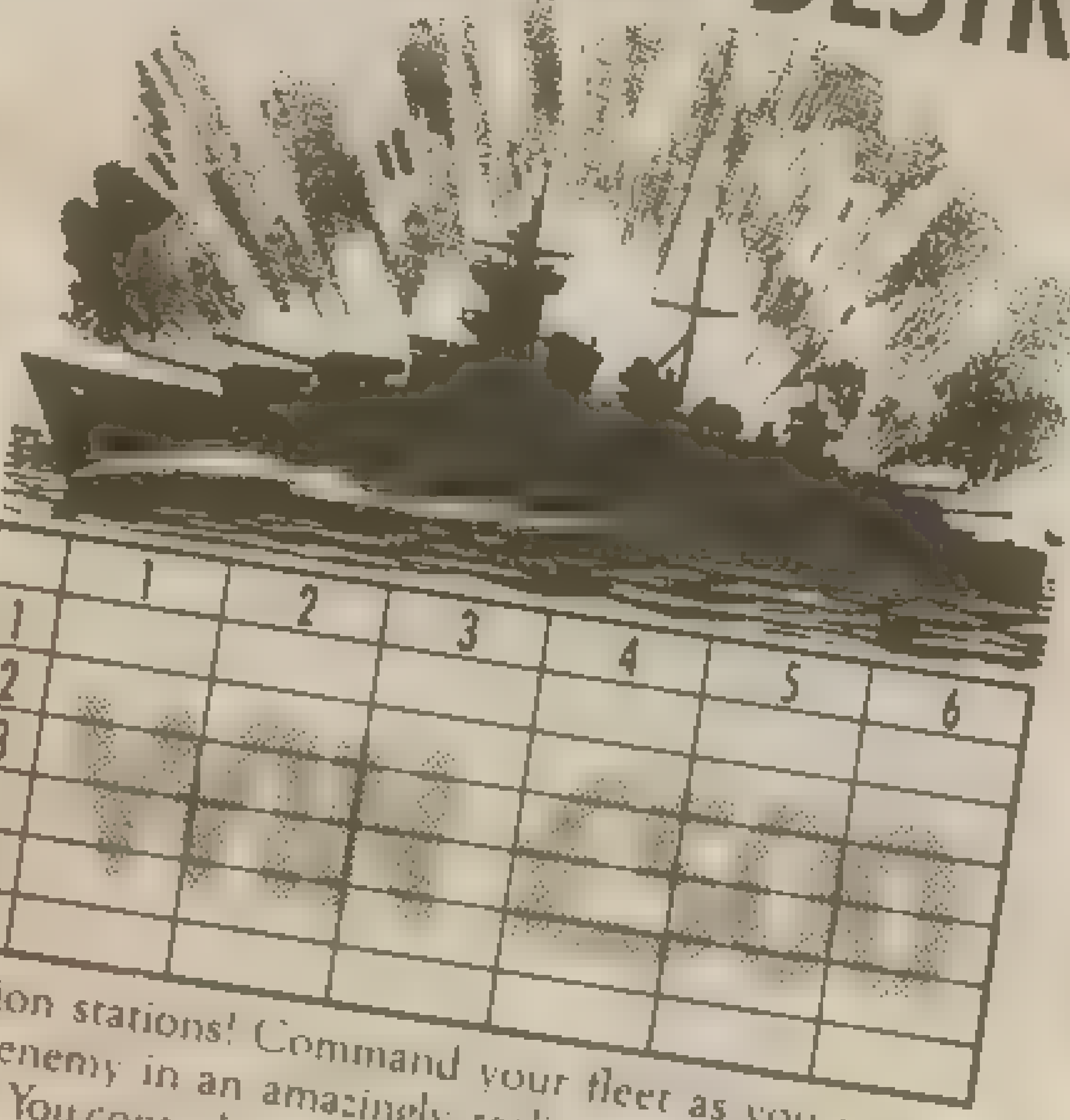

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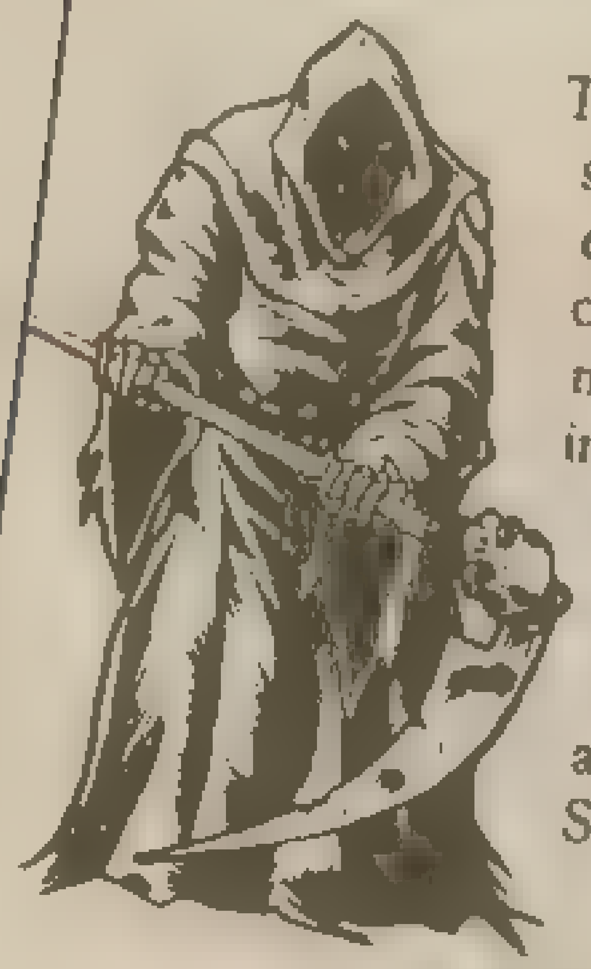

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THE SHOPPING EXPRESS GUIDE TO PC ESSENTIALS

The PC has an enormous range of high-quality software available for it, but the choice can be bewildering. Read on to discover the Shopping Express guide to 50 indispensible programs

There's probably more software for the PC than for all other machines put together, so a comprehensive list is clearly impossible. Choosing 'the best' fifty programs is impossible too – it depends on what you want your PC to do. But here's the *Express* list of the 50 programs we think should be at the top of your shopping list. Word processors, home accounts, spreadsheets, programming utilities... the list goes on and on. We've cut down our categories to include software that you can't afford to be without, at home or at work; the essential PC software.

We give what we consider to be the all-round best program or programs in each section, together with a brief description of each, and a few highlights and drawbacks. There's also the availability details, though as ever, check the mail order ads in Shopping Express first. You're sure to find some excellent discounts available.

WORD PROCESSORS

● PROTEXT V4

£100 • Arnor • 0733 68909

For sheer text and file handling *Protext* stands out. It's fast, flexible and full of features; good spell checker and mail merge facilities so powerful you can write program-like text and file handling routines. For writers and journos this is a must.

▲ Fast
▲ Spell checker
▲ Powerful mail merger
▲ Powerful macros
▲ Loads of extras – calculator, word counter etc
▲ Two file editing

▼ No real graphics capability
▼ Not good at handling complex layouts

VALUE FOR MONEY ★★★★★

● TASWORD

£50 • Tasman Software • 0532 438301

Superb value and fast. A few odd limitations but an excellent basic word processor. *TasSpell*, the spell checker, also available, along with *TasRes*, the memory resident version of the processor.

▲ Memory resident and fast
▲ Easy to customise
▲ DOS shell macros
▲ Word count, notepad features etc

▼ Clumsy text insertion
▼ Some limitations – find and replace won't accept spaces, blocks must be whole lines etc

VALUE FOR MONEY ★★★★★

● CELEBRITY

£80 • Software Paradise • 0222 887521

A well designed word processor with a lot of extras and plenty of appeal for the first time user. It doesn't show the compromises usual with beginner's packages.

▲ Good clear command structure
▲ Calculator, calendar, DOS manager etc
▲ Thesaurus and spell checker
▲ Up to four text windows

▼ Thesaurus US and a bit slow
▼ Window dimensions fixed

VALUE FOR MONEY ★★★★

● MULTIWRITER 2

£115 • NewStar Software • 0245 265017

A very powerful package that includes many features usually found only on really expensive word processors. *WordStar* dot commands can be included directly in a document so this may be ideal for *WordStar* diehards. Lots of extras – author's utilities and a filing program, for example.

▲ *WordStar* compatible
▲ Good menu and context sensitive help
▲ Extras: contents and index generator etc
▲ Filer utility

▼ Filer awkward to use

VALUE FOR MONEY ★★★★

● BORLAND SPRINT

£199.95 • Borland • 0734 320022

A hugely powerful word processor – certainly worth looking at if you need the complete works. Breathtakingly fast with an auto-save feature that means even if the power goes your document has been saved exactly as it was at that moment. Comes with front ends that make it look like *WordStar*, *WordPerfect*, *MultiMate* or Microsoft *Word* if you're used to those packages. A bit complicated to use though and modelled on C, which doesn't help.

▲ User interfaces for *WordStar* etc
▲ Thesaurus and check-as-you-type spell checker
▲ Cross-referencing
▲ Very powerful indexing facilities
▲ Laser and PostScript support

▼ Very complex to use – only get it if you really need all the power
▼ Still a few little bugettes

VALUE FOR MONEY ★★★★★

● MICROSOFT WORD

£395 • Microsoft • 0734 500741

Another of the heavyweights. Packed with every feature you can imagine, but you're paying for it. Easy and intuitive to use for such a high-powered package – ideas outliners, contents/ indexing and footnotes, very good graphics facilities – and of course it runs under windows and OS/2.

▲ All the heavyweight features:thesaurus, spell checker, author utilities
▲ Ideas outliner
▲ Good graphics import facilities
▲ Runs with windows and OS/2
▲ Easy to use

▼ Very pricey
▼ Need a powerful machine – slow unless you have a 286 or 386

● WORD PERFECT

£250 • Sentinel • 0932 231164

Supposedly the biggest selling word processor on the PCs. A huge program with everything you could ever need: thesaurus, spell checker, two column text, footnote and index generation, automatic date insertion, end notes, mathematical symbols etc etc etc. Frankly though a disappointment for the huge price; only any use if you're already committed to the program because of training – or if you can get it on expenses.

▲ Everything you could ever need in a word processor
▲ Exemplary manual
▲ Available on minis, mainframes as well as micros

▼ Vastly expensive
▼ Some very complex keystrokes for functions – must be learned by rote

VALUE FOR MONEY ★★★

● CHIWRITER

£92 • Shareware Marketing • 0297 24088

The word processor for scientists. Originally a shareware product, this word processor lets you design and use predesigned fonts for scientific use. Can cope with any mathematical symbols – even the most complex integrals for example. The most impressive WYSIWYG you'll ever see! Might be worth hanging on a couple of months for the PC version of *LocoScript* though, which will no doubt outperform *Chiwriter* for less money.

▲ Handles any maths – integrals, complex set theory symbols etc
▲ Does foreign characters too
▲ Footnotes and font designer

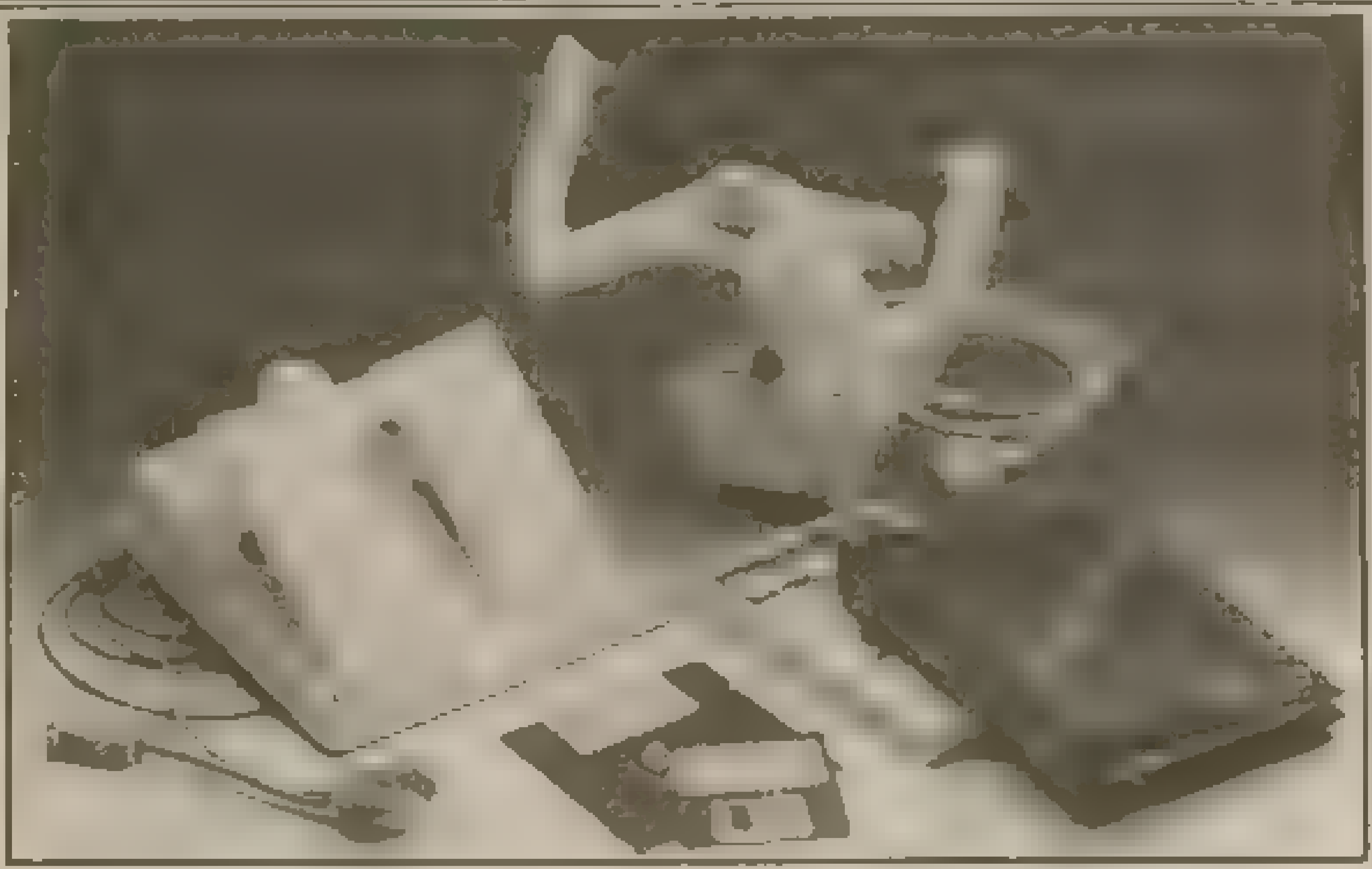
▼ Limited as a word processor: no mail merge, word count only after spell check
▼ Only one document at once
▼ Hidden extra costs for hi-res or screen

VALUE FOR MONEY ★★★

● TOPCOPY PLUS

£109 • Innova Software • 0453 835379

Big brother of *Topcopy* – a very powerful and well-featured word processor. Verging on the 'big league'. Very fast – memory resident – and keeps everything reformatted as you go. Multi document



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10 Fax Roll	£35

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5.25" Ext Drive 2086 360K	£71

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Dual Drive 12" Mono	£734
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Dual Drive 14" [illegible] Res	£897
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40MB HD Colour	£1060
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M290S DD 1.4 MB Mono	£1100
M290S DD 1.4 MB Colour	£1357
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M290 40 MB HD Mono	£1459
M290 40 MB HD Colour	£1715
ON SITE MAINTENANCE	£17
External 1.2MB 5.25"	£162
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Prodot 9 80 Col [illegible] Pin	£280
Prodot 9 x 80 Col [illegible] Pin	£356
Prodot 24 80 Col 24 Pin	£382
Swift [illegible] Col [illegible] Pin	£239
Swift 9 Pin 80 Col	[illegible]

Star	
LC10 II Mono 180CPS	[illegible]
LC10 Colour 144CPS	£153
LC15 132Col 180CPS	£250
LC24-10 180CPS	£188
LC24-15 132 Col	£314
FR10 [illegible] Col 300CPS	£276
FR-15 132 Col 9-Pin	£383
XB24-10 24-Pin	£383
XB24-15 132 Col	£505

Prices subject to change + £18 delivery Hardware next day + £2 delivery consumables per item all plus VAT 15%

handling together with the speed of operation makes it ideal for people who shunt text around a lot, good spell check and mail merge too.

▲ Memory resident
▲ Can import text from defined areas of underlying screens
▲ Auto reformats but still fast
▲ Three files on screen at once, handles up to six documents
▲ Spell checker and mail merge
▲ Very fast

▼ One or two useful commands missed (eg. swop letters)
▼ No auto backup of files

VALUE FOR MONEY ★★★★

● GALAXY

Shareware • Advantage/PDSL • 0242 224340/ 0892 663298

One of many shareware word processors that resembles *WordStar*. Doesn't compete with ones you pay a hundred quid for, but for the price you get a usable program ideal for occasional use.

▲ Menus
▲ Spell checker
▲ Bargain price

▼ Restricted power – best for occasional user

SPREADSHEETS

Probably one [illegible] the primary uses for PCs, the spreadsheet is the staple of the small business user and some [illegible] the best around are available for the PC.

●VP PLANNER PLUS

£172 • Paperback Software • 0245 265017

Fully featured, Lotus 1-2-3 compatible spreadsheet generally held to be the ultimate in PC spreadsheet programs. There's support for a mouse as well as multi-dimensional financial modelling.

▲ Comprehensive
▲ Complex modelling can be achieved
▲ Reasonably priced (there's a cut-down £115 version too)

▼ Difficult to learn
▼ Hard drive and printer required

● LUCID 3-D

£91 • PCSG Inc./Software Paradise • 0222 887521

Cheap spreadsheet from PCSG lacking graphics but with the ability to perform most of the necessary functions. There's no 'minimum hardware' requirement and it's cheap. Also features 3-dimensional linking of cells from different spreadsheets.

▲ Cheap
▲ Linking of separate spreadsheets
▲ No minimum hardware requirement

▼ No graphics

● THE TWIN

£67 • Mosaic Software • 0604 830496

Cheap 'n' cheerful spreadsheet that is the younger sibling of the outrageously named Legend: Twin Level III. The Twin is an almost exact copy of Lotus 1-2-3 [illegible] a fraction of the cost of that eponymous program. Well worth 67 quid.

▲ Cheap
▲ All of the features of Lotus 1-2-3
▲ Powerful graphics

● LEGEND: TWIN LEVEL III

£207 • Mosaic Software • 0604 830496

The spreadsheet that sounds like an adventure game. Burrow deep into the powerful Lotus 123-like features such as 3-dimensional cell linking, graphics and database functions.

▲ 123 features provided
▲ 3-D cell linking
▲ Powerful

▼ Not for the spreadsheet novice

● PC-CALC PLUS

£57 • Shareware Marketing • 0297 24088

Cheap basic shareware spreadsheet that is nonetheless good quality. All necessary spreadsheet functions implemented. You can get a version of this spreadsheet complete with – cut-down – manual for five quid from PC user groups. Full documentation will require registration with Shareware Marketing and the handing over of the full price

▲ Cheap, cheap, cheap
▲ Easy to learn
▲ Available from user groups

▼ Basic

DATABASES

Everyone needs a database. From business use such as motor car parts, baked beans stocks and can opener suppliers to home uses such as stamp and record collections and train number cataloguing.

● DBASE IV

£595 • Ashton-Tate • 081-5699768

The database that's got it all. Spawned a huge range of clones for many other machines. Complex and all reaching, dBase is a database-specific programming language that allows you to build filing programs tailor-made.

▲ Complex
▲ Can be tailored [illegible] suit individual needs
▲ Industry standard

▼ Expensive
▼ Not for beginners

● DBXL 1.2 DIAMOND RELEASE

£115 • Software Paradise • 0222 887521

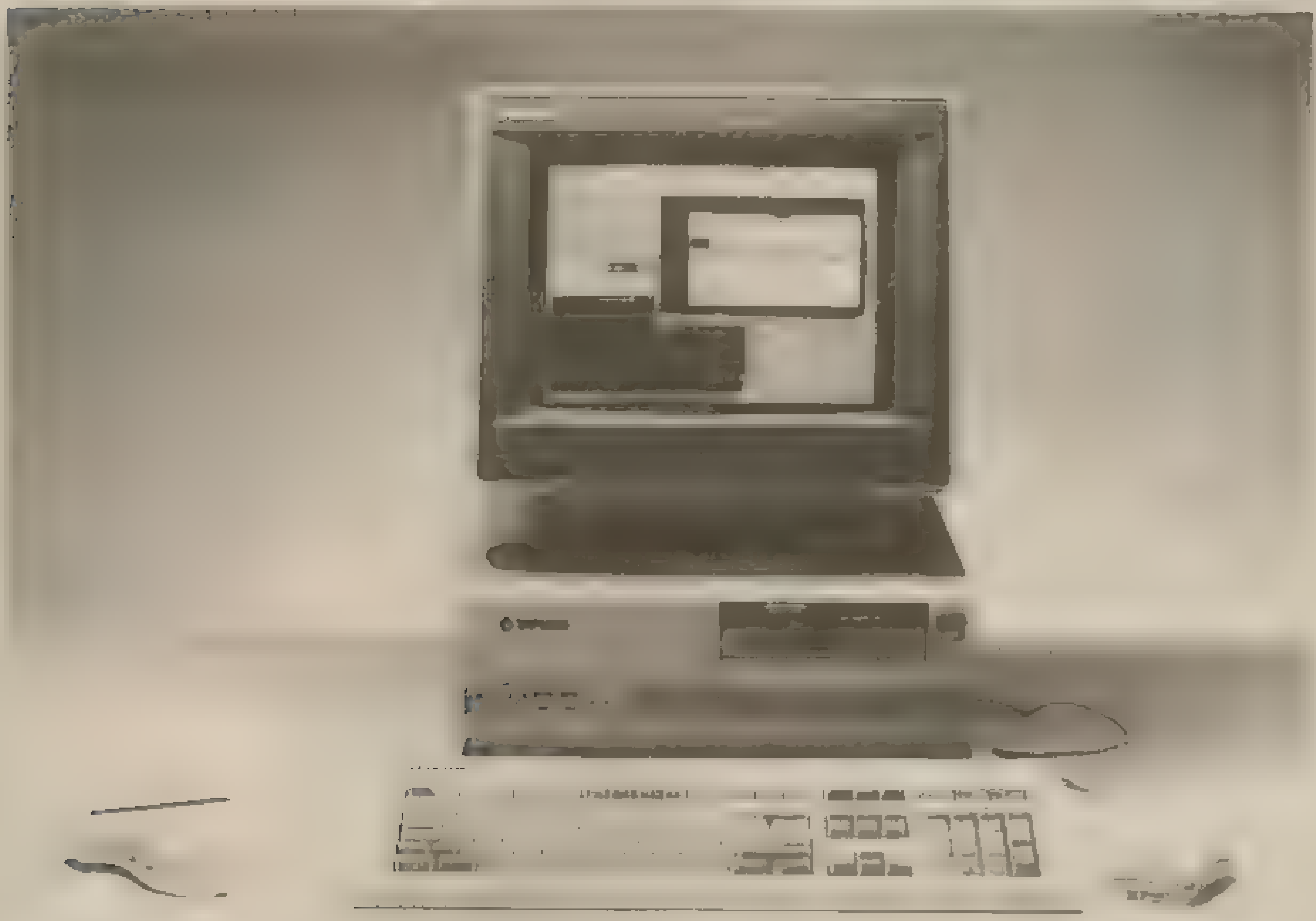
dBase clone featuring all the abilities of the original with a better text editor, variable arrays and user defined functions at an affordable price.

▲ Cheap
▲ Very powerful

▼ Difficult to master
▼ Not for beginners

The Complete Systems Company

TATUNG



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● TAS PLUS

£120.75 • Megatech • 081-874 6511

Powerful database that allows you to spread a database over many files. It's programmable, relatively easy to use and cheap.

▲ Fully featured
▲ Easy to use
▲ Cheap

● HYPERPAD

£114 • Software Paradise • 0222 887521

Apple Macintosh users have long had the opportunity to use the definitive associative database handling of *Hypercard* based on the concept stacks of interconnected cards each containing various data, programs etc., all accessible via a serious of icon 'buttons'. And now, at last, this power is available to the humble PC user with Software Paradises *Hyperpad*. All the features of the original system are here.

▲ Comprehensive
▲ Easy to use
▲ Moderately priced

▼ Setting up may confuse absolute beginners

COMMUNICATIONS

Got a yen to communicate with your fellow PCers? Need to transfer data around the planet? Maybe you want to connect several computers together to maximise your peripherals?

● THE $25 NETWORK

£25 • EQ Consultants • 0334 84248

Networks abound at the moment but you'd be hard pushed to find one that would set you back less than several hundred pounds, before, that is, the release of The $25 Network from EQ Consultants. For the tiny figure of 25 quid (EQ alas, hold no stock in exchange rates) you can join two PCs in perfect harmony, to have and to hold, from this day on...

▲ Amazingly cheap
▲ Everything you need (except a cheap null modem cable)
▲ Easy to use

● CALLBOX

£171.35 • Callbox Ltd • 0600 4478

A program which takes control of your telephone allowing you to perform all manner of snazzy dialing functions, number recalls, auto calls etc. All this for only one hundred and seventy one pounds, wow!

▲ Cheaper than equivalent hardware (i.e. telephone)

▼ Breath-takingly expensive
▼ Only for those without the energy to dial a number

● LINK MASTER

£19.95 • Amstrad Software • 0277 230222

Billed as the 'complete kit for file transfer between two PCs' thereby implying a hard/software cast of thousands, Link Master is a cable and bit of software for £20 that allows you to transfer files between two PCs. Why not just use floppy disks? Or, perhaps that would be asking just a little too much (perhaps it wouldn't)

▲ Cheap
▲ Easy to use

▼ Superfluous
▼ Unnecessary (unless you have machines with wildly differing drive formats

● PROCOMM PLUS

£59 • Shareware Marketing • 0297 24088

Fully-featured general purpose communications program for use with modems. The program supports the industry-standard Hayes command language and seven file transfer protocols. There's an earlier version known as Procomm which can be had from the same supplier for a few quid.

▲ Reasonably cheap 'n' cheerful
▲ Hayes compatible
▲ Plenty of file transfer options

ACCOUNTING

The serious side of the PC. And let's face it, if you've spent the enormous sums necessary to buy the computer system, your going to need to save money somewhere.

● MICROSYSTEMS

£454 • Multisoft • 0420 85572

Very powerful accounting package emanating from well-known accounts software writers Multisoft. Menu driven programs ensure ease of use and give access to virtually every possible accounts function necessary. There's some extremely good help screens too in case you should encounter difficulties.

▲ Menu driven
▲ Fully featured
▲ Easy to use

▼ Too expensive for the home or small business user

● A-B-C

£299 • A-B-C Systems • 081-661 0488

Quality accounting package that has the distinction of sporting a word processor, database and spreadsheet as well as the accounting module. All the features of a professional accounts application are built into A-B-C as well as good after sales service and help.

▲ Built-in word processor, spreadsheet and database
▲ After sales service
▲ Can be used on single disk systems

▼ A little expensive for home users

● PENNYWISE

£50 • Buzzz Software • 0865 56083

Simple to use, affordable accounts analysis software for the home and small business user.

▲ Cheap
▲ Easy to use

▼ Lacking in features
▼ For the smallest of businesses

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25 x 5.25" HD	£11.00	25 x 3.5" HD	£27.25
50 x 5.25" HD	£21.50	50 x 3.5" HD	£54.00
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▲ Easy to use
▲ Cheap (if you're already making flipping great wadges of cash playing the market)

▼ Not cheap if you're a home dabbler

● RETAILER

£185 • Ob-serve • 0258 451299

Calling small business persons everywhere. Tired with spending [illegible] day on your feet then all evening poring over barely intelligible ledgers, payroll files etc.? Worry no more, your problems are [illegible] an end. Retailers provides everything the busy moneymaker needs [illegible] wring even more time (and therefore profits) from there small holding.

▲ Powerful
▲ Feature packed
▲ Reasonably priced

▼ You need to have a semblance of understanding of basic accounting before being able to use to the full

● TAXCALC

£19.95 • Consumers Association • 0800 252100

Cheap personal tax planner which has some very good built-in help screens and the printout of which you can send directly to the Inland Revenue.

▲ Very cheap
▲ Easy [illegible] use
▲ Suitable for beginners

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£431.25 • Ctrl-Alt-Deli • 0908 662759

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▲ Uses ordinary cheap dot matrix printers
▲ Lots of features

▼ Beyond the budget of the average home user

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£70 • MGA Microsystems • 0233 83571

Straightforward, unpretentious little desk top publisher, providing most of the features necessary to produce newsletters, propaganda pamphlets, communist diatribes etc.

▲ Cheap
▲ Clip art library
▲ Can import graphics

● FINESSE 2

£171 • Logi UK • 0925 413501

GEM-based, *Ventura* look-alike providing many of the abilities of the original for [illegible] fraction of the price.

▲ GEM/3 included
▲ Sensibly priced
▲ Good graphics import

▼ You must have a mouse

● TIMEWORKS DTP

£129 • Electric Distribution • 0480 496789

Another desk top publisher with slightly more than a passing resemblance to industry-favourite Ventura. Lots of features, can use standard dot matrix printers and has a copy of GEM/3 included.

▲ GEM/3 included
▲ Powerful
▲ Reasonably priced

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▲ Very cheap
▲ Very easy to use
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Don't buy commercial applications programs, write your own...

● ZORTECH C V3.00

£57.44 • Zortech • 081-316 7777

Professional quality C compiler from well-known language producer Zortech. The package [illegible] cheap yet fully-featured. Very fast.

▲ Fast
▲ Cheap
▲ Widely available

▼ Standard C tutorial text necessary

● DBFAST

£113.85 • Megatech • 081-874 6511

dBase clone at a fraction of the price of the original program. This [illegible] not for beginners but fortunately there is a small planet's worth of dBase text books on he shelves of your favourite bookstore. What are you waiting for?

▲ Very cheap
▲ Powerful

▼ Not for beginners

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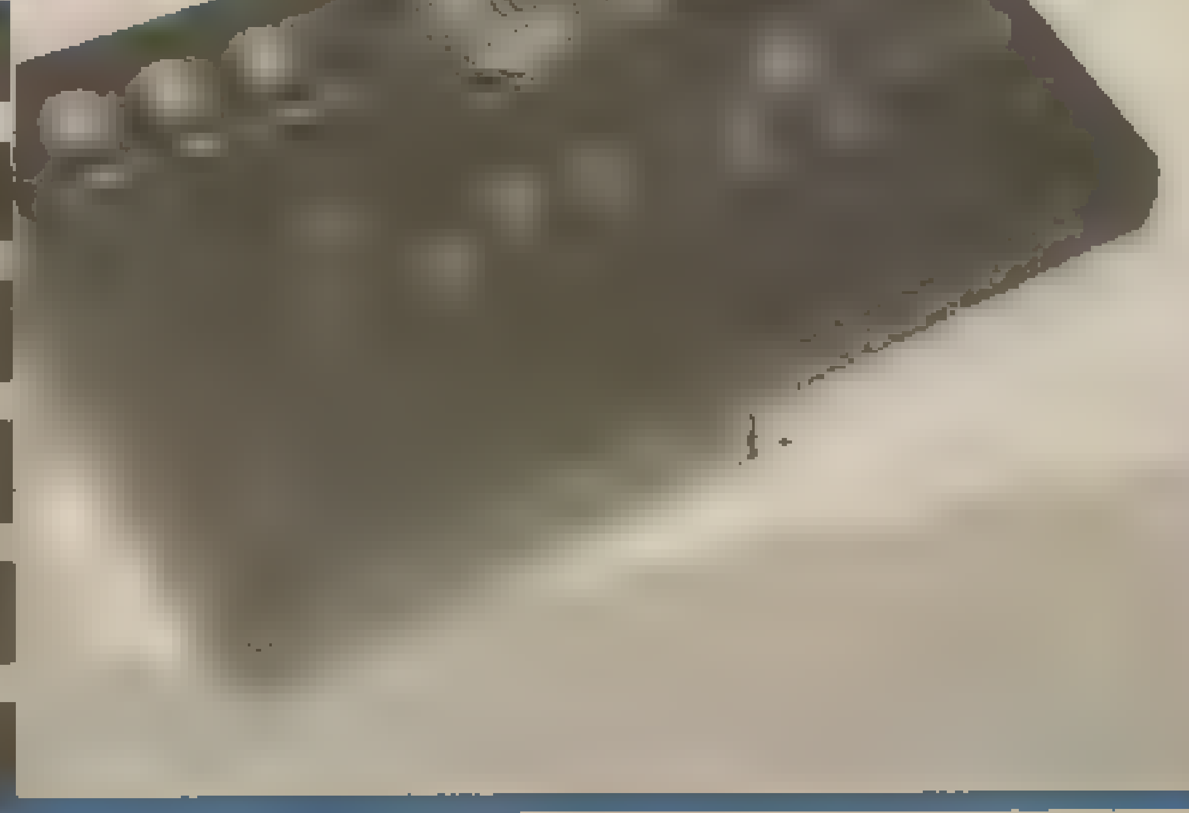

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£115 • Borland UK • 0734 320022

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▲ Powerful
▲ Good editor
▲ Can used on single drive systems

▼ A little overpriced

GAMES

Not formerly associated with games playing, the drop in the price of the average PC compatible has set off a chain reaction amongst leisure software writers eager to cash [illegible] on a new market.

● 688 ATTACK SUB

£29.99 • Electronic Arts • 0753 46465

Send a mass of Eastern Bloc seafaring metal to Davy Jones' locker. Alternatively, take command of Soviet Russia's latest submarine and [illegible] fascist hunting. Either way, this game provides everything necessary for superior submarine simulation. Ahoy m'heartys.

▲ Wonderful graphics
▲ Complex
▲ Quality gameplay

▼ VGA necessary for best display
▼ Expensive

● FLIGHT SIMULATOR 3

£52 • Microsoft • 0734 500741

The latest in a long line of definitive flight simulators from MicroSoft for the PC and its compatibles. This program has it all for those looking for quality simulation rather than blood 'n' guts. Expensive, but then the best always costs more. Invest a few quid here.

▲ Super graphics
▲ All controls found in a real aircraft are simulated
▲ Lots of places to fly around, through, up and over.

▼ Expensive

● ELITE

£24.95 • Firebird Software • 0666 504326

Originally for the BBC micro and now available to discerning PC game players everywhere. Improved graphics and speed but a similar plot (nothing wrong with that I hear you shout!).

▲ Old faithful too good to be missed
▲ Wonderful graphics
▲ Fast

▼ Expensive (the eternal PC games criticism)

● F-19 STEALTH FIGHTER

£39.95 • MicroProse • 0666 504326

Another flight simulator but this one pits you fairly and squarely against an attacking enemy bent on destruction. Good graphics and good fighting action make this a superior offering.

▲ Complex
▲ Good graphics

▼ Expensive
▼ A little boring in the early stages

● INFOCOM ADVENTURES

£24.99 to £34.99 • Infocom/Mediagenic • 0734 311666

Here they are. The definitive text adventures from Infocom. Renowned by by those who like to grub about in haunted houses, caves etc., the world over. Good plots and lots of puzzles [illegible] solve.

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▼ Far too expensive

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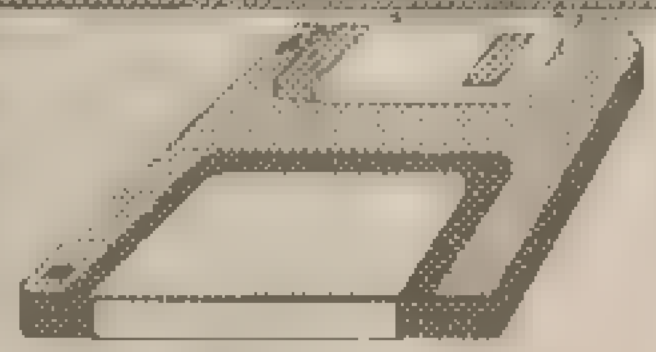

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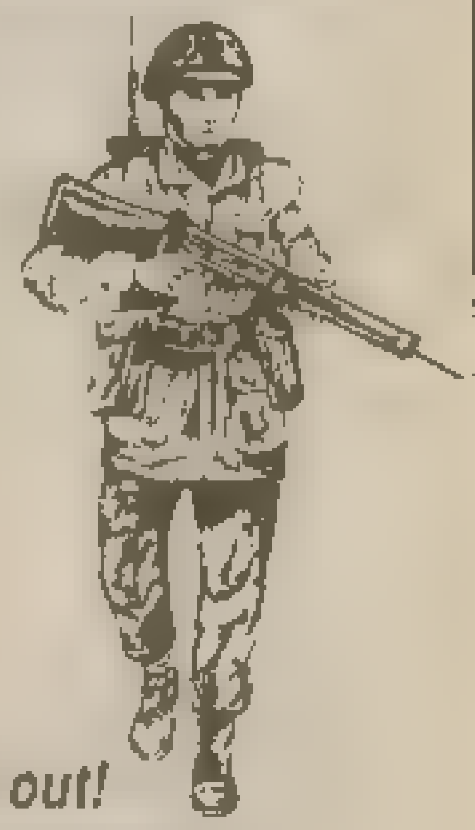

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ATARI

All our ST prices include: mouse etc. plus 5 disks of software including 'First Word' wordprocessor, utilities, 'Neochrome' graphics utility, game and demos.

NEW - 520 STFM DISCOVERY PACK

Good quality, good value package based around the 520STFM computer including 512K RAM, 1Mb Drive and built-in TV modulator. Also supplied is:

STOS Game Creator
Carrier Command
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Outrun
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Excellent starter package, including the very latest 1040STE machine with 1Mb RAM, 1Mb Drive, plus the following extras :

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Amazing value, special ST package from Atari! Includes the very latest 520STE with 1Mb drive, joystick, mouse, user guide, 5 disks of public domain software, plus an incredible selection [illegible] chart-topping software with a total RRP of over £500! Software included is:

R-Type
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Xenon
Gauntlet II
Black Lamp
Starray
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520STE RAM upgrade to 1Mb, includes 2x256K SIMMS modules	£49.00
520/1040STE RAM upgrade to 2Mb, includes 2x1Mb SIMMS modules	£145.00
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520STFM 1Mb Drive Upgrade Kit with full fitting instructions	£54.95
520STFM 1Mb Memory Upgrade Kit, requires soldering	£59.00
Mega ST1 with monochrome monitor	£599.00
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Mega ST4 with monochrome monitor	£1099.00
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SC1224 colour monitor	£279.00
Philips CM8833 14" colour monitor (stereo sound) c/w ST cable	£259.00
Vidi-ST 16-tone video frame grabber inc.digitising software	£89.00
NeoDesk 2.0 Desktop replacement	£34.95

Amstrad PC Range

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'LOTUS 1-2-3 v2.01'
FREE with any PC2086!

All PC models include 'Top 10 Solid Gold' Games Package!

CREATE YOUR OWN HARD DISK CONFIGURATION FOR ANY 1512/1640/2086 MODEL!

Using a Western Digital Filecard, which includes XTree and SpeedRead software, we can upgrade the PC for you before despatch. Using the 'SD' column of the price table, simply add £225.00 inc.VAT for a 21Mb configuration, £239.00 for a 32Mb configuration, or £279.00 for a 41Mb configuration.

	SD	DD	AMS H.D.
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CGA (COLOUR) 1640	477.39 549.00	564.35 649.00	738.26 849.00
EGA (ECD) 1640	564.35 649.00	651.30 749.00	825.22 949.00
2086 MONO	433.91 499.00	520.87 599.00	694.78 799.00
2086 CD	564.35 649.00	651.30 749.00	825.22 949.00
2086 12" HRCD	564.35 649.00	651.30 749.00	825.22 949.00
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upgrades / accessories

PC1512 memory upgrade to 640K	£39.95
Maths Co-processor 8087-2	£109.00
NEC V30 (8086 replacement)	£24.95
Archive XL 40Mb Ext. tape streamer	£379.00
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Enhancer 101 replacement keyboard	£74.95
3.5" drive (720K) for SD models	£79.95
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Low price External 3.5" Floppy Drive (720K), suits any Amstrad PC 1512/1640 inc. Double Drive and Hard Disk models, uses no expansion slots £99.95

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prices in brackets are excluding VAT

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Star XB24-15 wide carriage version of XB24-10, with 41K buffer	£649.00
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- Fantastic hand-held portable 16-bit video games machine
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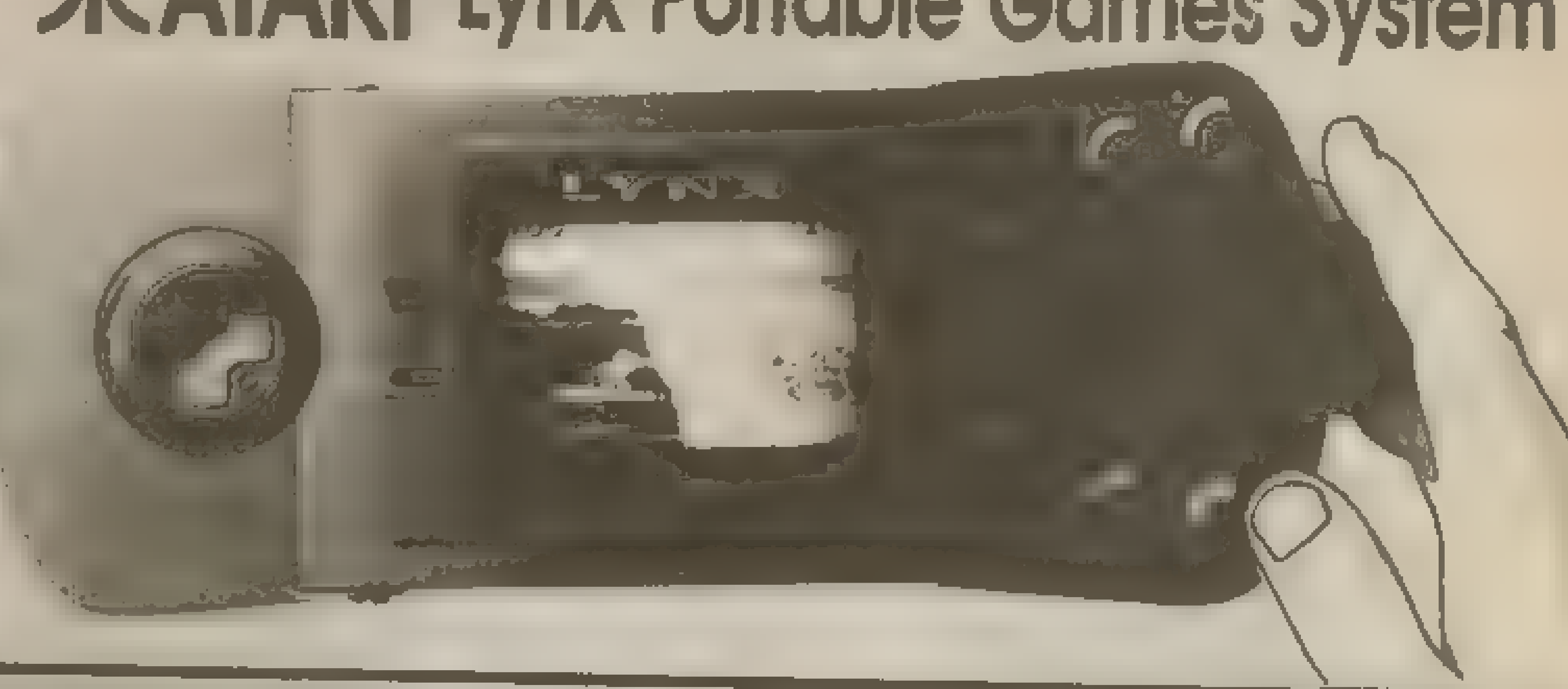

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All A500 Packages also include the following : Karate Kid II, Jaws, Wordwright (w processor), Super Hucy, Battle Squadron, High Steel, Better Dead than Alien, Night Walk

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Good quality 20Mb Hard Disk from Commodore, including its own PSU. Features sockets for up to 2Mb of FAST RAM expansion (see below). 80ms Access time, with up to 2.4Mb/sec transfer rate. Will autoboot when used with Kickstart 1.3. Has built-in cooling fan.

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PHILIPS 15" FST TV/Monitor (MODEL 2530)

With its dedicated monitor input, this model combines the advantages of a high quality medium resolution monitor with the convenience of remote control Teletext TV - at an excellent low price !

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- ✓ Full Infra-red remote control
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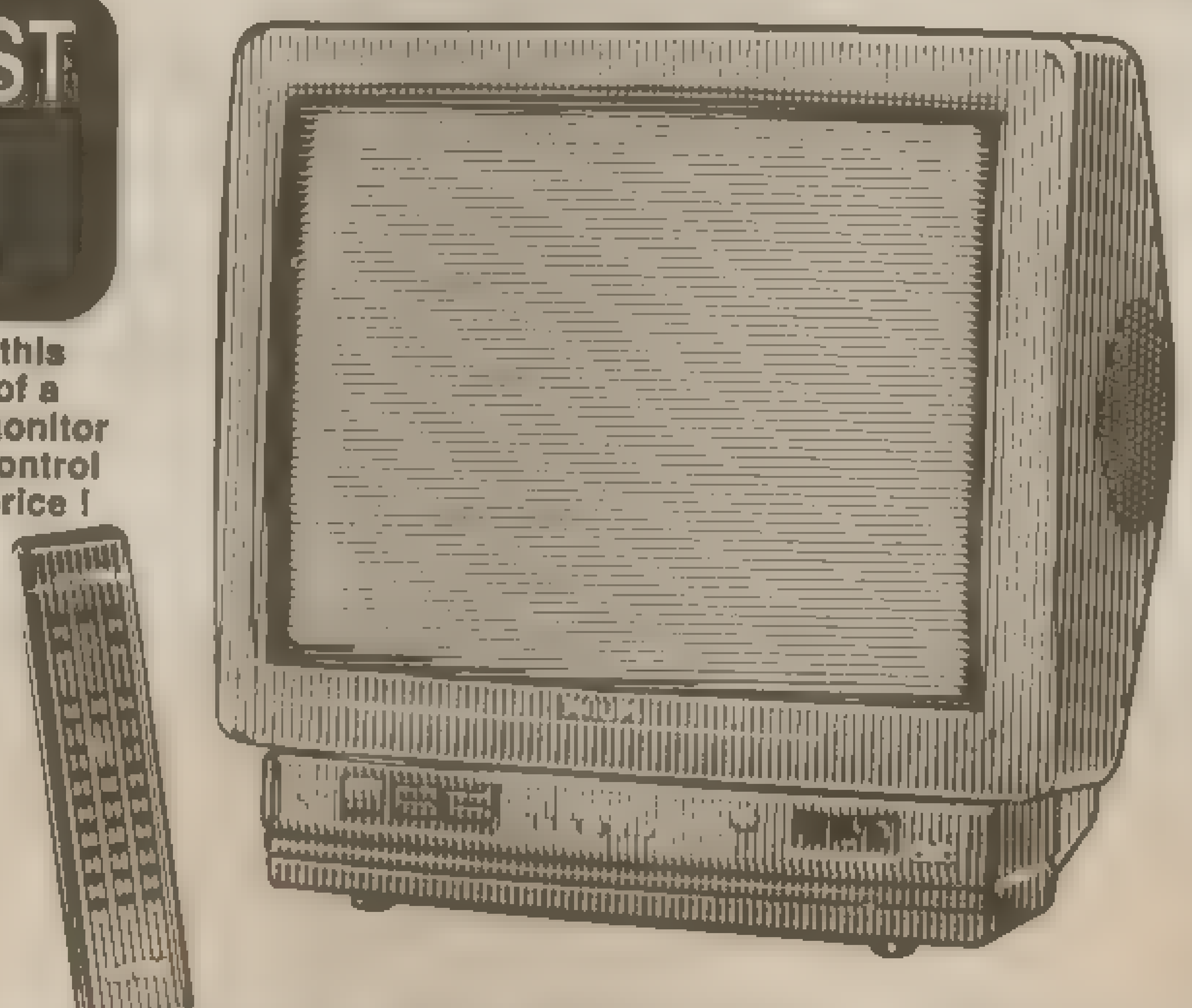

£269.00 Includes VAT, delivery and computer connection lead

ATARI ABC-286

FREE with all ABC-286 machines : Logotron '8-in-1 Professional' inc. W/Processor, Database, Spreadsheet, Graphics, etc.

- ☆ 80286 Processor with 8 Mhz clock speed
- ☆ 640K RAM standard, expandable to 1Mb
- ☆ 3 AT / XT compatible Expansion slots
- ☆ 1 RS232 Serial and 1 Parallel ports
- ☆ Disk controller supports 2 floppy & 2 hard drives
- ☆ One 3.5" (1.44Mb) floppy drive and a 30Mb hard disk drive fitted as standard
- ☆ Socket for 80287-8 Maths Co-Processor
- ☆ Video graphics adapter supports EGA, CGA, MDA and Hercules, with digital video port
- ☆ 102-key DIN spec. AT-Protocol keyboard
- ☆ Supplied with MS-DOS 3.3 and GW-BASIC

ABC-286 S.D./30Mb without monitor	**£803.85**
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Optional 5.25" 1.2Mb internally fitted floppy drive available £119.00

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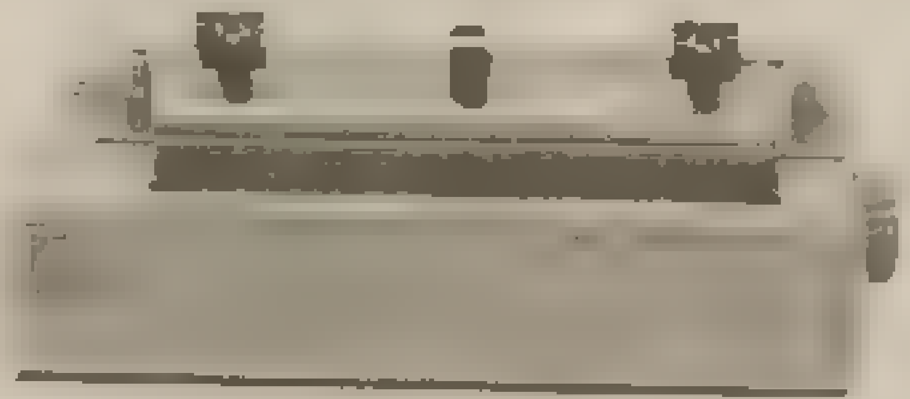

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PCS86 COLOUR	699.00 803.85	799.00 918.85	999.00 1148.85	N/A N/A
PCS286 MONO	N/A N/A	949.00 1091.35	1049.00 1206.35	1149.00 1321.35
PCS286 COLOUR	N/A N/A	1099.00 1263.85	1199.00 1378.85	1299.00 1493.85

- ◆ 101/102 key AT-layout PS/2 compatible keyboard (Mini-DIN)
- ◆ 1 x RS232 Serial interface and 1 x Centronics Parallel interface
- ◆ VGA compatible (OVC) display controller fitted standard
- ◆ VGA monitors : 14" Colour / 12" Mono. (dot pitch 0.39mm)
- ◆ Socket for Optional Maths Co-Processor
- ◆ Hard Drive versions : 20Mb (27ms access time) / 40Mb (29ms)

Logotron 'Eight-in-One' package includes Wordprocessor, Database, Spreadsheet, Graphics etc. 'Top 10 Solid Gold' games pack includes Arcade, Adventure, Creativity, Simulation & Strategy titles.

PCS-86

- ◆ NEC-V30 microprocessor 10Mhz clock speed, 0 wait states
- ◆ 640K RAM standard, upgradeable to 2.5Mb on motherboard
- ◆ Single or Twin 3.5" floppy drives with 720K formatted capacity
- ◆ 3 Full size XT-compatible 8-bit expansion slots

PCS-286

- ◆ Intel 80286 microprocessor 12MHz clock speed, 1 wait states
- ◆ 1Mb RAM standard, upgradeable to 4Mb on motherboard
- ◆ Single or Twin 3.5" floppy drives with 1.44Mb formatted capacity
- ◆ 3 Full size expansion slots; 1 x 8bit and 2 x 16bit (XT/AT style)

ACCESSORIES

5.25" 1.2Mb/360K drive with controller	£129.95
PCS 286 2Mb RAM Upgrade Kit	£145.00
PCS 286 4Mb RAM Upgrade Kit	£290.00

12MHZ AT motherboard with 1MB of RAM, built in clock etc. latest spec. Bargain at £185. Phone Adam on (0908) 220495 after 5.30 p.m.

SEGA master system with Light Phaser, £350 worth of games and mags, altogether worth £500. Will sell for just £250. Fantastic offer. Contact me on (0272) 793497.

COMMODORE 64 disk drive and printer for sale. Price £350, accessories with it. for more details contact Anish on (0204) 62157.

MASTER Roms: C.C. Mega3 £50. C.C. Interbase £25; PMS publisher & fonts £40; Watford Quest/Conquest & Mouse £60; Wapping Editor & Disk £50; Others available (0452) 506361.

PCW 8256 Protext / Pascal 80 / PXPL/Knife + / DTP / AYE / Games / etc. 18 disks £50. 70+ PCW mags. £10 (0582) 422850. 6-9 p.m. eves.

AMIGA 2000 40 MEG hard-drive backup software. All boxed. One month old. cost £2,400 will sell for £2,150. Tel. (0933) 50691 after 6 p.m.

C.C.T.V. camera complete with - 2 lens 4 m/m F1.4 wide angle 8.5 m/m F1.3. As new, £100. Modulator for viewing C.C.T.V. on/ U.H.F. TV set, £60. Brand new 20 MHZ oscilloscope complete dual/beam £245. Details 061-633 0824.

BRAND new boxed Tantel Prestel receiver, with [illegible] leads, manuals. Latest type. Touch controls. Offers. Phone 021-308 5278, 6 - [illegible] p.m.

PC enlnge with pal converter plus six games. Only two months old £180 or swap for a colour VGA monitor. David (0270) 69300 after 6 p.m.

C64. All spares. Three cassettes, 2 joysticks, £200 + games, Simons Basic, manuals. Total bargain. £250 o.n.o. Tel: (0563) 29196. Gregor after 5 p.m. Make an offer.

BARGAIN for first caller Amiga software. inc. Sonix and Datel sampler. First decent offer gets it. Phone after 6 p.m. (0742) 341875 (Simon). All manuals and leads included.

AMSTRAD CPC 6128 colour monitor, datacorder, manuals, CP/M, hi-soft "C", plus various games on disk and tape, incredible value at £195. Barnstaple (0271) 44298.

SEGA with light phaser, joystick R.F.U. and £350 worth of software. Titles include Psycho-Fox and Spellcaster altogther worth £500. Will sell for just £250. Phone (0272) 793497.

ATARI ST software, Fleet Street publisher, £50 o.n.o. Cyber Studio, £15 o.n.o. Phone Stephen on (0661) 21675.

PHILIPS NMS 8220 MSX II with 192K of RAM with 31 cartriges and over 20 cassettes. V.g.c. Only £220. Tel. Justin on Bristol (0272) 603100 after 7 p.m.

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CPC bargains: Vindicators, Microprose, graphic adventure creator, Emlyn, Stormlord, Leaderboard plus many more. For long list write to: G.Wade, 50 Colville Street, Fenton, Stoke-On-Trent, Staffs, ST4 3LB.

SPECTRUM +2 over 75 original games and PowerPlay Joystick £140 ono. Kempston Pro Joystick interface & Quickshot II Joystick £10. Rotronics Wafadrive, 2 Wafas £15. Data-Recorder with sound amp £15. 48K Spectrum Pcb any reasonable offer. Call (0706) 341874 after 4.30pm.

68000 tutor book & internals (both Abacus) for sale. Perfect for starting Assembly Language on Atari ST. Worth £30 sell for £10. Phone Dan on 091-281 0269.

AMSTRAD PC1512DD (dual 5.25" Disk Drive) with colour monitor, 3160 Dot Matrix Printer, games and software. Cost £800+ will sell £630 ONO. Tel: (0792) 473005.

SPECTRUM +3 with games and Tasword. Also 12" B&W portable television. All leads/manuals etc. £130. Tel: (0943) 602203 (West Yorkshire).

ATARI ST software, computer concepts, fast basic on cartridge £35: Microdeals external clock £15; Outrun £6, Backlash £6; Phone Carl after 6pm on 051-256 8178.

ATARI ST software all £6, Space Harrier, Bionic Commando, Black Lamp, Nebulus, Gauntlet II, Sidewinder. All originals. Please phone Carl on 051-256 8178 after 6.30pm.

CBM64 datasette, two joysticks, books, mags, over 100 games, worth over £600 sell £200 ono. Buyer collects. Edinburgh 031-669 8603 (Jason). Phone before 12.

CBM64 games for sale. Old and new. All 99 games for £150 or sell separate. Phone for titles and prices. P&P included. 031-669 6207 before 5.

CPC software for sale. Untouchables, Op Wolf, Microprose Soccer, Heroes of the Lance, War in Middle Earth plus stacks more. Also green monitor. Ring Brian on 031-665 5899.

AMSTRAD PPC512 portable computer with twin 3.5" disk drives, case, manuals + DOS. £225. Wordperfect junior £40. Tel: 081-464 7454.

AMIGA action replay for sale only £39. Phone (0473) 642527 (day) or (0473) 685365 (eve) Ask for Stuart.

3.5" discs used with ST 50p each 200 must go. 4 top Sega games £40. No instructions: To Paul, 3 Moorend Ave, C'Wood, Birmingham, B37 5SD.

C64 disk drive, 2 back-up cartridges, joystick, modem, light gun, £1000 worth of games, blanks, data cassette, all boxed as new. £300 ono. Tel: (0253) 733443.

ZX spectrum 48K, slight fault. Kempston printer interface. Both £40 ono. Ring for details (0482) 647958 (Hull).

520-ST games (all originals) including Indy and Zak McKracken adventures, E-Motion, Tatespin, Mercenery, War in Middle Earth. Around £30. Phone Patrick Harvie (0389) 62816 (evenings).

ATARI 520STFM for sale. 1 Meg memory, 1 Meg internal and external disk drives about £1300 worth originals. Accept £370 ono. Contact James on Leeds (0532) 790308.

AMIGA Batpack 2 paint package, extra games, dustcover, manuals, 10 blank discs, 4 months old, £330 excellent condition. Phone Tony: (0895) 448307.

PEN pal. The ultimate word processor for the Amiga £50, DevPac 1 £15. Tel: Aldershot (0252) 315434.

AMIGA A500 (1MB) system Inc. A501, extra drive, Philips CM8833 stereo colour monitor, joystick, mouse, manuals etc £500. Tel: Aldershot (0252) 315434.

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Amiga

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As above + monitor	£640
Amiga 500 1 meg ram	£444
As above + monitor	£694
Amiga 500 class of 90s	£570
As above + monitor	£820

Atari

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As above + monitor (col)	£549
520 STE Power pack	£375
As above + monitor (col)	£640
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1040 STE Extra pack	£490
As above + monitor (col)	£740

Printers

* We are STAR dealers *

Commodore PC Starter packs

Commodore PC10 from	£570
Commodore PC 20 from	£800
Commodore PC 30 from	£1030

Monitors

Atari SM124 12" hi res mono monitor for ST	£139
Philips 8833 med res colour monitor ST/Amiga	£250
Commodore 1084 for Amiga, PC, C64	£260

IBM Compatible monitors cga, ega vga available

Disk Drives

Disk drive 3.5" for Amiga range	£79
Disk drive 5.25" for Amiga range	£139
Disk drive 3.5" for Atari range	£89
Disk drive 5.25" for Atari range	£139

Memory Expansion

Amiga A501 (Commodore)	£139
Amiga 0.5 mbyte ram expansion	£79
Atari STE 1 mbyte ram upgrade	£109
Atari STE 2 mbyte ram upgrade	£279
Atari STE 4 mbyte ram upgrade	£460

Disks

3.5" Bulk unbranded Sony *10	£5.52
3.5" Bulk unbranded Sony *50	£28.00
3.5" Bulk unbranded Sony *100	£53.00
5.25" Bulk unbranded Verbatim *10	£4.60
5.25" Bulk unbranded Verbatim *50	£23.00
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MIGA Action Replay for sale £50 ono. No ne wasters! Phone 081-308 0371 after pm. This is only 3 months old.

RAMS 16K American MM5298 PCBs etc. ffers O.W.H.Y. no reasonable offer refused. eed cash to upgrade my Atari disc cont PCB. Tel: (075485) 668.

AMIGA 1/2 Meg expansion on/off switch £59. Wantdd B/W Video Camera with lens. Phone Farooq (0698) 817644 (Uddington, Glasgow).

MT91 Inkjet printer. 360 DPI resolution. Worth £900+ asking £700 ono. Buyer must collect (East Midlands area) Phone: (0332) 367642.

BBC 'B': with disk drive, 16K sideways RAM, software (tape), manuals, leads etc. £190 ono. Phone (0934) 620785.

TWO Sinclair ZX 81's for sale. One 16K Ram-pack, approx 18 games (both working) £60 ono. Tel: (0734) 750918.

NEC P2200 24Pin printer. Good condition. Two spare ribbons, £100. Phone 081-397 4966.

CPC and Spectrum hardware, software, serious software for Jupiter Ace. SAE: Jones, 2 Town Mead, Oakford, Devon, EX16 9EW.

MAGAZINES for disposal. Various titles, must clear quickly. Send SAE for list. State wants. Postal replies only. Sorry no phone callers. Charles Trager, 7 Grantley Street, Glasgow, G41 3PT.

PSION organiser model XP with manual, VGC (have upgraded). Welcome offers/swaps. SAE details: Postal replies only, Charles Trager, 7 Grantley Street, Glasgow, G41 3PT.

CBM64, 1541 d/drive, Star LC10 colour printer, action replay cartridge complete with leads and manuals plus loads ▨ games, utilities etc. £275. Phone Alistair (0234) 240034 (Olney, Bucks).

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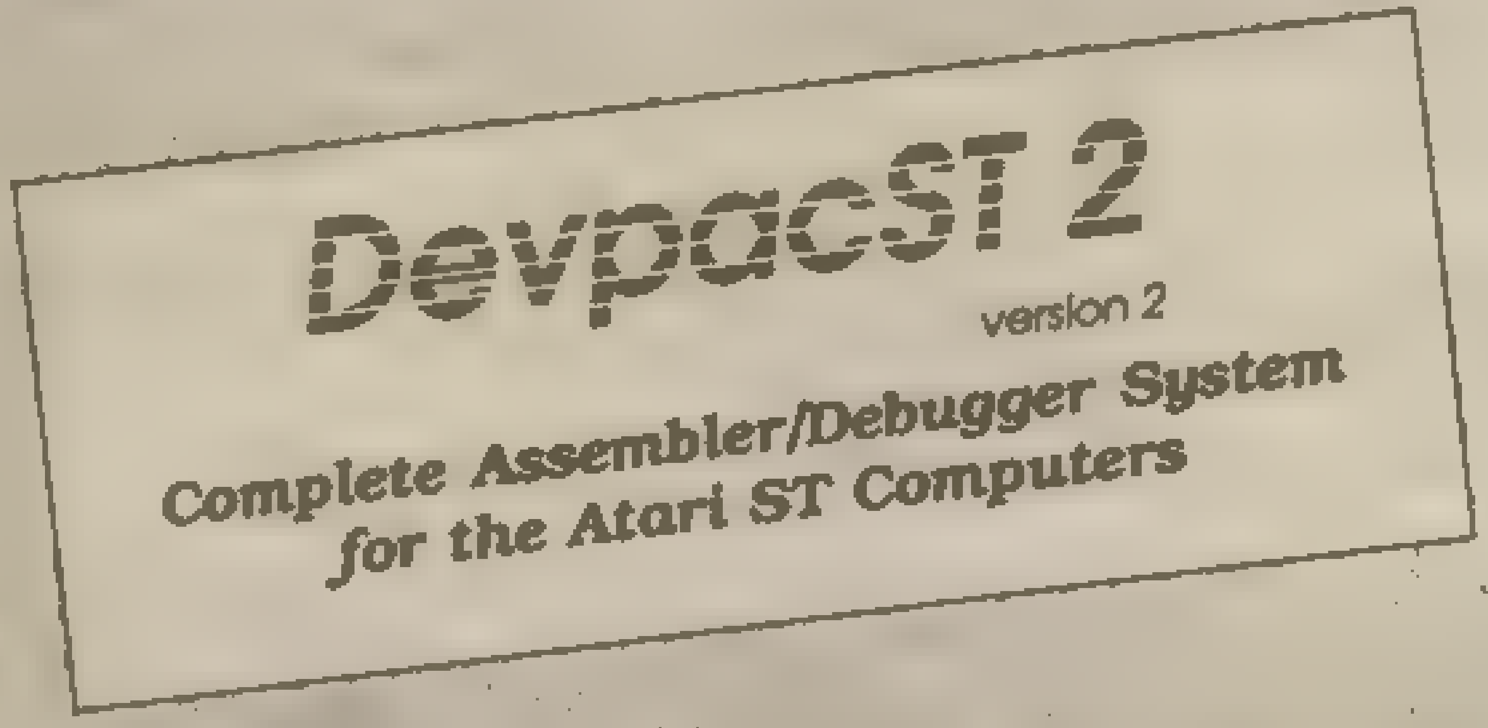
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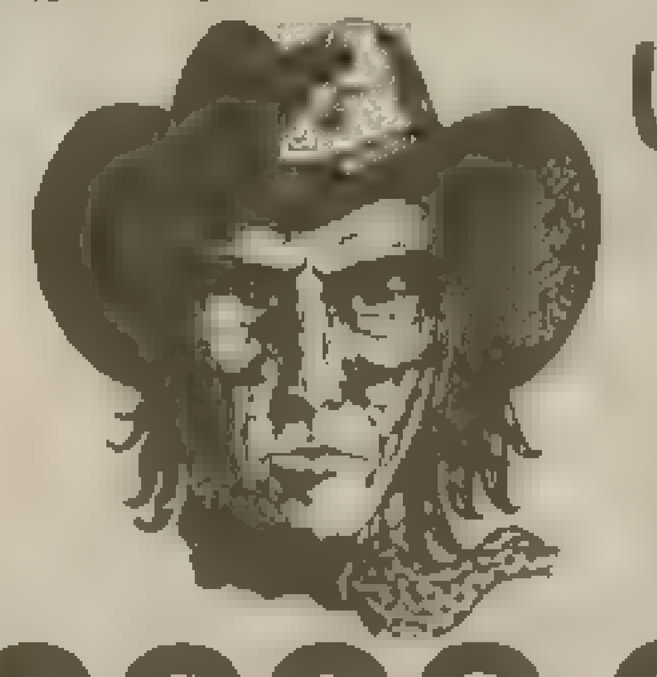

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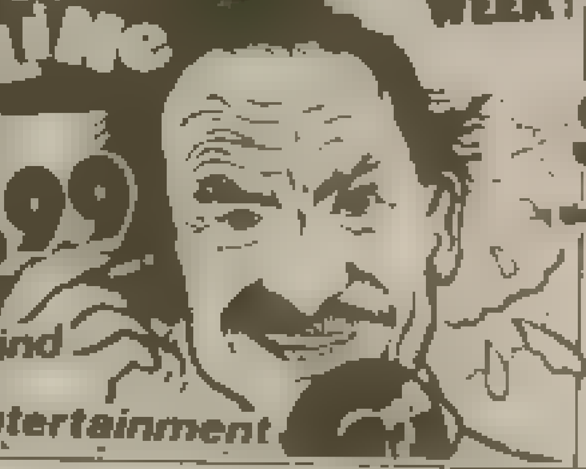

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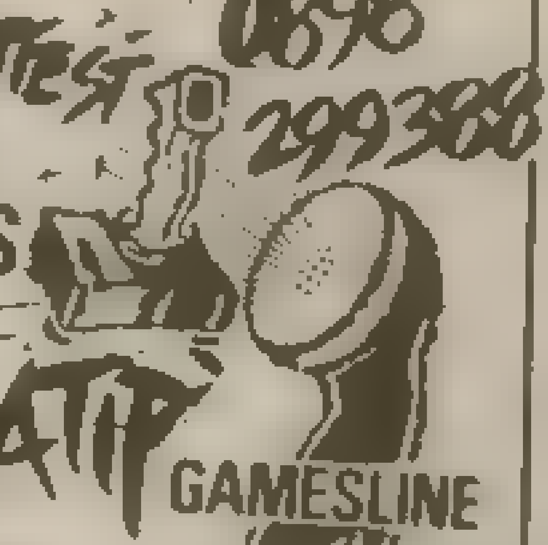

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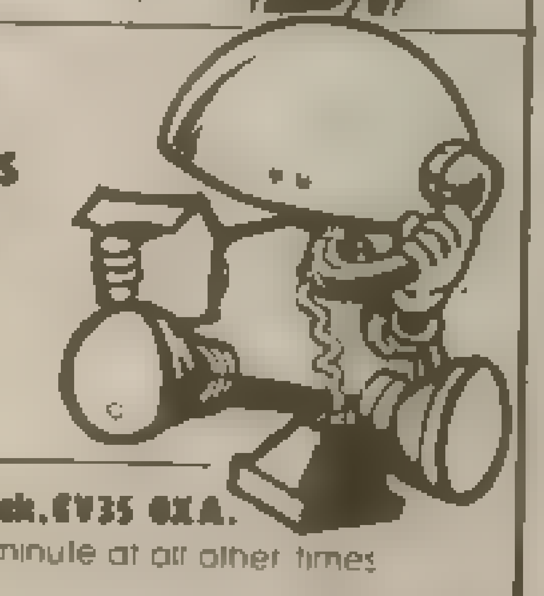

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THE PD COLUMN

There is a lot of software out there available for the price of a disk. This week Adam Waring turns his attention to the ST and Amiga and finds an emulator for the Sinclair ZX81, some enhancements for GEM, a fast disk formatter, some stunning fractal graphics and a huge Star trek game...

Did you used to have a ZX81? Lots of people did. It was the one that started it all, back in the heyday of computing. You could only buy them via mail order – and even had the choice of soldering the thing together yourself.

It was a wonderful machine indeed. The colour palette consisted of black or white. It had no graphics or sound. Memory consisted of a massive 1K of RAM. Ah, those were the days...

Well now all the nostalgia can come flooding back. *ZX81 Emulator* from Sphinx Software will run all those old favourites on the ST – you know, *Space Invaders* made out of the letter 'A' and so on.

You were considered lucky if you had a 16K RAM pack and to play games properly you had to buy a separate plug in joystick interface. Those extras are of course catered for by the emulator.

It's faithful down to the last detail. Even the keyword entry system, where BASIC commands could be typed in with a single keystroke. It was lovable on the ZX81, but having no idea which keyword is on which key does hamper things slightly. The ZX81 had about six uses printed on each key – the ST's keyboard is relatively unmarked.

Both BASIC and machine code programs can be run, as a duplicate of the ZX81 ROM is included in the software. Plenty of listings are included on the disk, so you can play blocky versions of *Missile Command* and *Tennis* to your hearts content.

About the only recognisable difference is that the programs are loaded and saved to disk rather than tape. Those flashing black and white lines on screen for minutes on end will be missed.

The only problem is how to load all your old '81 software. The ZX81 had a super-slow tape interface – a feature missing, thankfully, from the ST. You could type in all those old listings from *ZX Computing* over again, but...

The *ZX81 Emulator* comes from a disk packed with plenty of other goodies. Useful utilities of all kinds can be found on the disk – code-named Uti 61.

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WHEN IS PD NOT PD?

Due to an unfortunate cock-up a couple of issues ago, a program made its way into the PD column that was not in fact PD at all. The program in question was *Wordfinder* from Bradway Software, which received a mention in issue 90.

We apologise both to you for any misunderstanding caused, and Bradway, which understandably were rather alarmed to discover its program in the column. The person responsible has been sent to bed without any supper.

Wordfinder is still a rather spiffy program though, even if it's not PD. It costs £15.50 from Bradway Software, Hillset, Upper Padley, Grindleford, Sheffield S30 1JA.

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TOS's normal size. You can have up to 84 sectors and 10 tracks, as long as the drive in your machine can handle it.

It's quicker than the standard format too, and there's none of the faffing about with GEM windows warning you that formatting erases everything on the disk, and are you absolutely sure that you want to do it.

And if you think that GEM could do with a total face-lift, there's *GEMplus*. Design your own icons for disk drives, folders and file types. The advantages are that you can make different types of program and data immediately identifiable. For instance, an artist's palette could be designed to represent an art program.

If you're at all technically minded – or would just love to relive those earlier days with 'Uncle' Clive's little black box – then the Uti 61 disk is a must.

FRACTALS

Fractals are an everyday computing buzzword, the most famous being the Mandelbrot set. If you've ever loaded a fractal generation program, one thing you'll have noticed is the length of time it takes before you have the pretty but chaotic picture on screen.

Many of these generation programs can take hours to calculate. *Fractal Chaos*, or P/ART 17 as Sphinx Software would have you call it, can come up with a facsimile representation in a matter of a couple of minutes – surprising as the program is written in compiled GFA BASIC.

The program has been written by a chap called Ian Conner. He's been writing fractal generators since he was in nappies, or at least for a good few years, starting on the old 8-bit Ataris. It shows. There's all sort of options available, such as histograms and re-contouring and other things that I don't understand.

That's not to say you have to be a total propeller-head to understand the program though. All the options are pre-defined so that you can produce a Mandelbrot set to be proud of with a simple keypress. You can then go on to vary all your real and imaginary numbers and so on to get some really unique patterns.

It's got a few nice touches too. The mouse pointer has been re-defined into a Mandelbrot set outline. There's even a movie option. You can load in a sequence of pre-defined frames, and sit back and watch as the program zooms in into the fractal, producing ever finer and finer detail.

Fractal Chaos is a fascinating piece of software. It really is the bee's knees when it comes to fractal generation programs. If you don't have one yet, get this one. If you do, get it anyway.

AMIGA

Space, the final frontier... Put yourself in the space-boots of Captain James T. Kirk with an out-of-this-world game from Premier PD. You're in charge of the USS *Enterprise* and have a mission – well, several missions.

This all new *Star Trek* is a pretty darn big game, coming on two disks. Premier knows them as 90 and 91. You start in orbit around Earth, with the crew awaiting your instructions, Captain. You can select different sections of the *Enterprise*, such as the Engineering room, Navigation and so forth.

There was only one real flaw – the instructions were in German (although the text throughout the game was in English). Hence, unless German is your second language, or you happen to know a translator, the only way to progress is by trial and error. Usually more error than trial, I found.

Still, I managed to set program the navigation computer for the Rigel system, and actually reached there in one piece. When I got there I took a few pot-shots at a friendly vessel who's only crime was to ask if they could borrow some of our energy (but they didn't say please).

Star Trek looks to be an impressive game. Certainly there's plenty of scope, but the incomprehensible instructions are a drawback.

I'm sure though that with a couple of hours of experimentation you'd have a whole new universe to explore. *Star Trek* games may be a computer cliché, but this one has what it takes. ■

WHERE TO GO

Premier PD, 15 Croxteth Drive, Rainford, Merseyside WA11 8JZ. Premier PD at budget prices! Premier is a bunch of Amiga enthusiasts who aim to provide good quality PD at low cost. The Amiga-only library has the following price structure: One to five disks – £1.50 each, six to ten disks – £1.25 each, 11 disks or more – £1 per disk.

Sphinx Software, Erw Fynydd, Carmel, Llanelli SA14 7SG. ST library with bags of PD for Atari's machine. Prices are £1.50 for a single-sided disk and £2.00 for double-sided. If you supply the disk the price plummets to just 50 pence single-sided, £1 double-sided.

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THE UPGRADER'S TALE

Sick of reading about all the wondrous things a 286 or 386 chip can do which your machine can't? Why not upgrade your computer, it's much cheaper than buying a new one. Stuart Anderton advises you to take up your motherboard and walk...

If you are a regular *Express* reader, you will have noticed the 286 and 386 PCs have become the norm. No-one trumpets the launch of an 8086-based computer any more, and prices seem to have bottomed out at the £300-£400 level.

If, like me, you have an old PC, you could be forgiven for feeling left behind by the galloping pace of technology. These wondrous ATs (AT is the general term for a 286, 386 or 486 PC, XT is the jargon for the older computers) are far too expensive to own – only now are they coming down below £1,000 – but the snail's pace of the affordable machine is frustrating.

The 286s offer so much: faster, more efficient processors, quicker hard disks, zippy expansion slots, better software and much more memory. If you start considering 386s then you get into the realms of multi-tasking several programs at once and much much more memory.

STARTING POINT

My PC is a battered old second-hand Walters which, if it girds up its 8088, can just about manage 8MHz downhill. I want to run Windows 3 on it to use a decent WYSIWYG word processor and dabble in desktop publishing, but with its current set up, that's a joke.

So, what to do? I want an AT-class machine, but I can only afford about £300 and you can't buy a decent XT for that. The answer is simple; turn back a few pages and you'll find a number of advertisers selling the component bits of an AT. All I need to do is strip out the slow parts of my current PC, replace them with turbo charged versions and I'm away. Because the old PC's box, monitor, power supply and the rest are perfectly OK, I only need to change a few essentials – at least that's the theory, this is the practice...

GRAND MOTHER

To make my PC go faster I needed to upgrade the processor; that means buying a brand new motherboard, one with a 286 or 386 chip in it, and the more megahertz the better.

A quick scan through Shopping Express brought my eye to rest on the ad for Blackmore Electronics, whose half page was crammed with the kinds of bits and bobs which PC addicts adore. It offers a selection of replacement motherboards, from a turbo XT (with a 12MHz chip) at £62 to a 386SX with all the trimmings at £399. The budget was tight so I opted for the £158 12MHz 'AT Turbo' board.

It duly arrived in a surprisingly small carton, and turned out to be a very neat looking piece of electronics indeed. I had imagined that a budget board would be old fashioned, but this has got to be one of the tidiest PC motherboards around, with almost all the functions carried out by a few chunky VLSI (very large scale integration) chips, and none of the clutter of the old one.

Before getting out the screwdriver, I had to give some thought to compatibility. The most common problem with this kind of upgrade is the keyboard; XTs and ATs have keyboards which are different electronically. ➤

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• *Oh dear: the power supply sockets are different. A few minutes soldering later...*

... and everything is in place. Now all that remains is to plug the cabling back and screw down the cards.

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Access

If you have an old keyboard, it won't work. I was lucky as mine, in common with most machines, has a little switch on the back which toggles between XT and AT.

HARD CORE

Another problem can be caused by hard drives. ATs are more intelligent than XTs and store information about their hardware in a SETUP program kept in battery-backed up memory. This means that any hardware changes you make can be dealt with using software rather than trying to remember which dip switch controls the disk drives. Now, if you tell an AT it has a hard disk it assumes that you have an AT hard disk, which of course I don't, I have an XT hard disk. The problem was easily solved by telling the machine that it didn't have a hard disk; then the hard disk worked fine. And you thought computers were based on logic...

However, it may well be worth avoiding this silliness by buying a new hard disk controller card. Although the XT model eventually worked fine, it ran at exactly the same speed as it did on the old machine. The new motherboard has expansion slots which can accommodate 16-bit cards, as opposed to the XT's 8-bit ones; this means it can transfer data twice as fast, which can seriously improve the hard drive's performance. A new controller card, which will also deal with the floppy disks, costs just over £100.

The rest of my expansion cards should have presented no problems: the serial and parallel card is normally an XT one anyway, even in shop-bought ATs, and the EGA display card is AT compatible. At some point in the future though I might look to upgrade the display to VGA, and then the new motherboard's 16-bit expansion slots will come in very useful, as 16-bit VGA cards work a lot faster than 8-bit ones.

YOU MUST REMEMBER THIS

The £158 motherboard from Blackmore had one glaring omission: memory. There are rows and rows of empty sockets on the board so all you need do is get hold of the chips and plug them in.

Unfortunately I couldn't do as I'd hoped and move the memory chips from the old board to the new. Accessing memory is quick, but it still takes a finite amount of time, usually measured in nanoseconds, for the memory to respond when the processor asks it a question. Different memory chips have different speeds, and mine were so old and cranky that by the time the processor had got its answer it had moved on to something else entirely, causing terminal confusion.

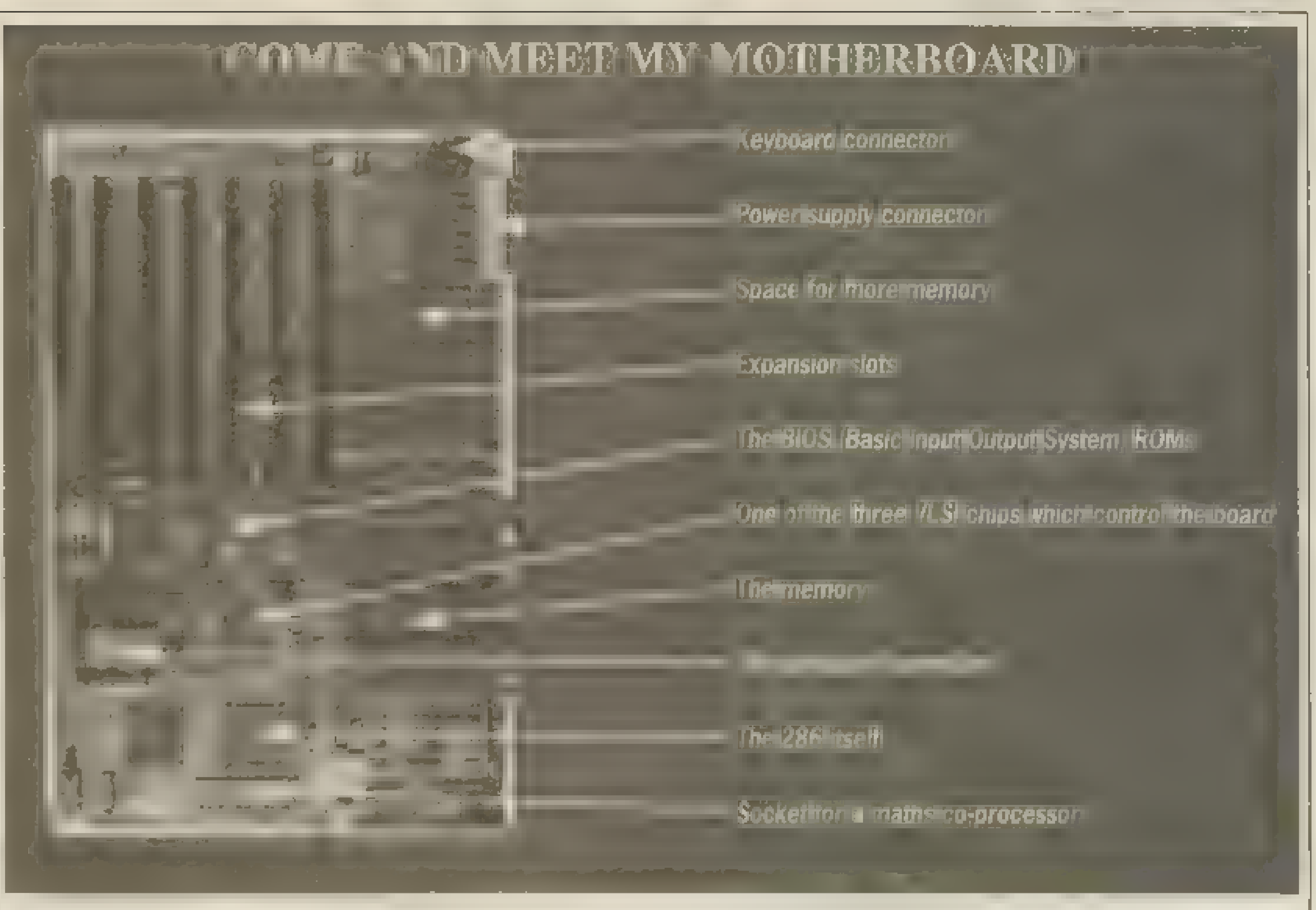
You might be luckier; if your chips are 120ns or faster you'll be fine – mine were 200ns. You can tell the speed by finding the memory chips – there will be rows and rows of them all the same together – and looking at the serial number. The last two digits, usually separated by a dash, indicate the speed – mine were 4164-20s, 20 standing for 200. Chips which end -12, -10 or -8 would work fine, but I didn't have any, so it was out with the cheque book to Blackmore Electronics who sold me a megabyte for £93.

Installing the memory was easy; the chips just push into the sockets and all you need check is that they are all facing in the correct direction. Finally, I was ready to get out the screwdrivers.

SCALPEL, PLEASE NURSE

Half a dozen cross-head screws later and the lid slid off to reveal the dusty confusion within. The first task was to unscrew everything in sight. The expansion cards were removed by loosening the retaining screw and easing (or, in one case, yanking) them out. The ribbon cables joining the cards to the disk drives had to be removed from the cards and slung out of the way, as did the second serial port and the joystick port which attach to the case near the power supply.

COME AND MEET MY MOTHERBOARD


Keyboard connector
Power supply connector
Space for more memory
Expansion slots
The BIOS (Basic Input/Output System) ROMs
One of the three VLSI chips which control the board
The memory
The 286 itself
Socket for a maths co-processor

Next the power connection was pulled off, and finally the floppy disks were unscrewed and slid out of the front. This finally exposed a somewhat dusty 8-bit motherboard, held down by small screws in the corners. Those taken out, the motherboard lifted clear without a complaint, easily pulling free of the small plastic retaining clips.

The new motherboard slotted into position, and although I couldn't get all the screws back in, enough fitted to make it secure.

Then I hit the first problem. The white plastic power connector at the back right of the motherboard was different to the one on my old one; it just wouldn't fit. This meant getting hold of a new connector for the power supply cable, cutting off the old one and soldering the replacement into place.

This was a might fiddly, but a quick check around the motherboards in the office showed that my old one was the only one with the odd connector, so it's unlikely to happen to you. If you want to check, pull off the power connector and look at the pins sticking up on the motherboard. If they are made of thin U-shaped pieces of metal then you're alright; if they are chunky solid square things then it's soldering iron time.

Once the connector was changed, the power cable clipped on at the back right corner, and then it was a matter of putting everything back. The disk drives went first, as it's awkward to get at the screws with expansion cards in place, followed by the cards and then the cabling. Back went the lid and voila.

I plugged the monitor and keyboard in, restored the power (I did say I disconnected the PC before doing anything didn't I?) and switched on.

The most immediately noticable difference was the speed of the memory check; it whizzed up to 1,024K in a fraction of the time it had previously taken to reach 640K. After a bit of playing with the SETUP program to get the hard disk going it worked fine.

PC Tools' system information option reckoned that the new board was running at around 400 per cent of the speed of an ordinary PC – a quite acceptable increase in poke which was reflected in most programs, and even in the speed that a DIR sped up the screen.

Windows 3 didn't exactly fly, but it was usable, and everything moved noticably faster. Because it was running on a 286 with more than 640K of memory it switched into 'standard mode' which allows it to run the latest Windows programs properly.

To use the extra memory over the 640K, I set up *PC-Cache* (a program from the *PC Tools* suite) to act as a hard disk buffer, storing the most frequently used parts of the disk in RAM, which pushed up the disk's performance enormously.

Also I use DR-DOS 5 instead of MS-DOS, and a feature of this DOS-compatible operating system is that it can run in extended memory – in simple terms this means that you can easily have 630K of the 640K program memory free, which makes a lot of difference.

The whole exercise cost £251 and took about four hours, including the soldering. I ended up with a considerably faster and more useable machine, which now meets my needs perfectly, and I didn't break the bank doing it.

I would recommend anyone looking for extra speed to consider the motherboard swap as a very cheap way to get more power. ■

Express *would like to thank Blackmore Electronics for its help in preparing this article. It sells all the products mentioned, and can be contacted on 0258 451347.*

IF YOU HAVE AN AMSTRAD

Amstrad PC1512 and 1640s are a very different kettle of fish to your normal PC clone. Their motherboards, power supplies and keyboard connectors are all unique, as is their graphics display.

It is in theory possible to upgrade an Amstrad, but it would involve a lot of hole cutting and the purchase of some extra bits, like a graphics card and a floppy disk controller and a power supply.

The bottom line with the Amstrad is this: simply for the hassle involved, you would be better off buying a new computer than fitting a replacement motherboard.

There is one other option however – a 286 add-on card. These plug in to an expansion slot and have a wire going to the microprocessor socket.

You don't get the full whack of 286 speed, as the motherboard's circuitry is still as slow as ever and the expansion slots are still 8-bit, but the increase in power is still noticeable and it's the only real possibility on an Amstrad.

Hyperace makes a range of these cards, running at different clock speeds, starting at around £310. Many PC suppliers sell them – try Chipboards on 0483 797959.

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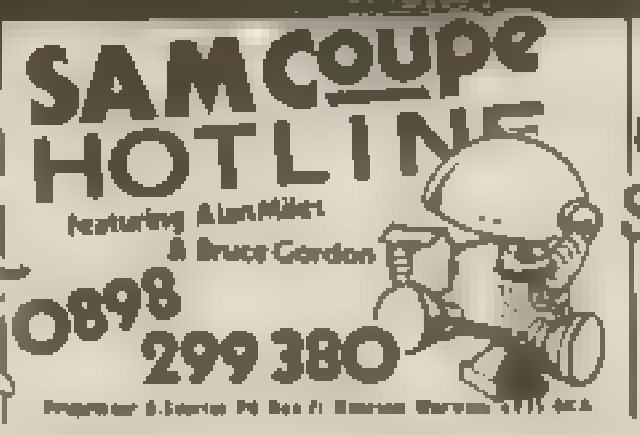
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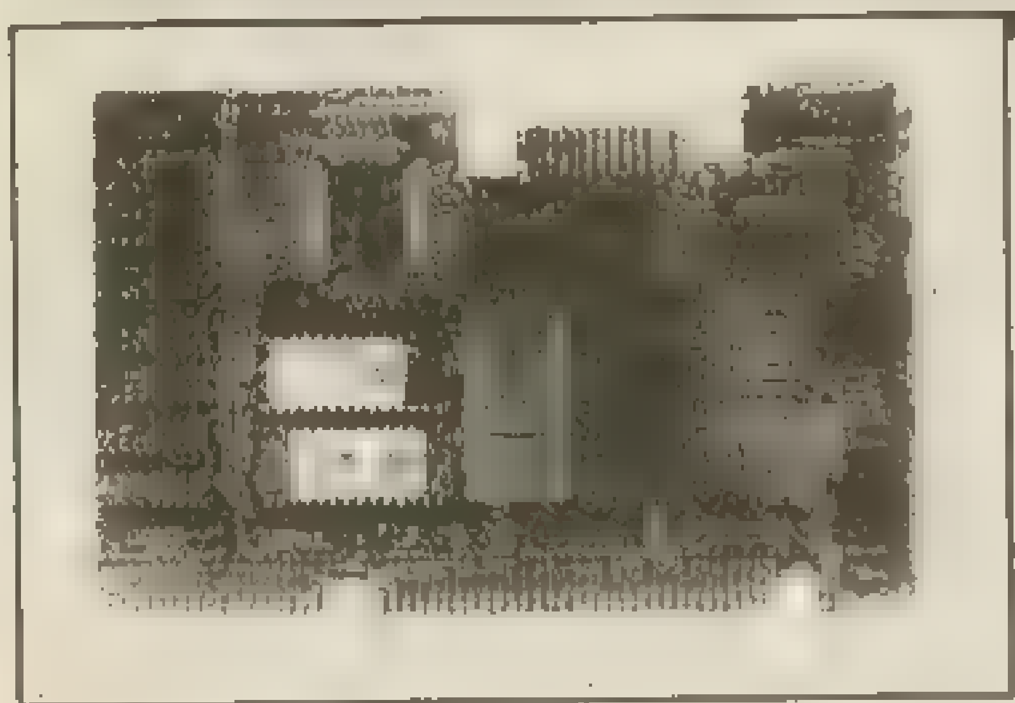

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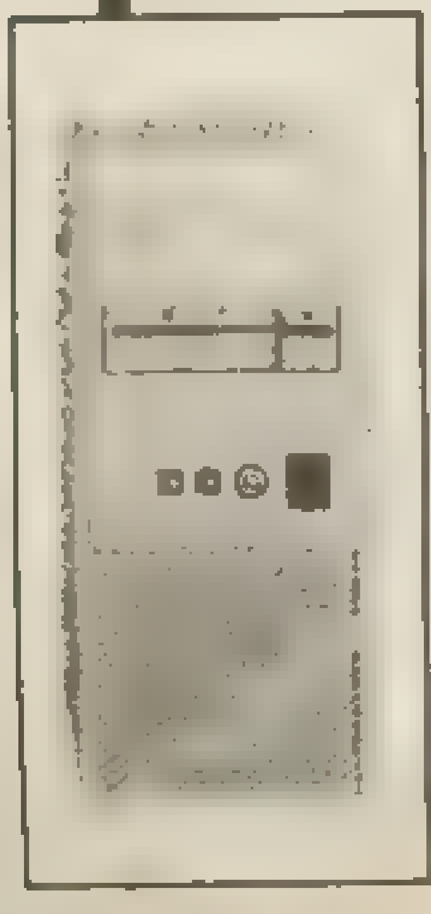

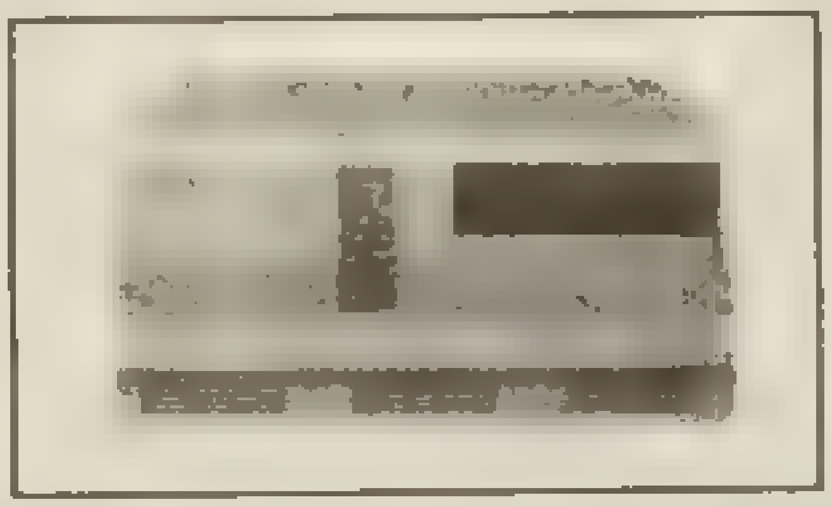

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TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Keith Pomfret's Tech Tips and we'll soon see you right. Send your sorry stories to Tech Tips, Beauford Place, 30 Monmouth Street, Bath BA1 2BW.

■HELP! PCW-PC link

A friend of mine has for some time been compiling quiz questions and storing them as text files on his Amstrad PCW. While this is a fine word-processor, we would like to take advantage of the DTP software I have for my ST and the multitude of IBM software we have ■ work.

The obvious solution is to convert his PCW files to ASCII format, but how do we get the files off those useless 3-inch disks of his?

My local computer store tells me that there are no 3.5- or 5.25-inch add-on drives for the PCW on the market. Is this true, and if so do you have any suggestions?

Mike Garvey, Westbourne, Bournemouth

Your local computer store is talking through its corporate botty. There are several suitable 3.5-inch and 5.25-inch drives that can be welded to your PCW. There are also programs that can enable your PCW to read to and write from PC disks. Another solution is to attach a serial interface to your PCW and use communications software to transfer the files across.

Compact Micros ■ one company that supplies 3.5-inch drives for the PCW – speak to their technocrat Phil Craven on 0274 636652. Alternatively, peruse Shopping Express for advertisers who can help, or pop down to your newsagent's and get a copy of the PCW magazine *8000 Plus*...

■HELP! Console me!

I am thinking of buying a Sega Megadrive but all the PAL versions I have seen show borders at the top and bottom of the screen. I feel this spoils the effect. Could you please tell me if it is possible to connect a SCART lead from the console up to the audio and video sockets at the back of a video recorder so as to get the display working correctly on a standard TV set.

Neil Walker, Nottingham

Our experts out in console land tell us that the PAL versions of the Megadrive currently on sale are in fact NTSC 'grey imports' that have been tweaked to run on a PAL system. As PAL has 100 or so lines more to its display than NTSC, there's a fair bit of the PAL screen redundant. Nothing can be done about this, but if you have access to a video with a SCART connector, you should be able to connect the console directly to it. Whether you can connect to any other video without going via the UHF modulator is doubtful, but you could always check with the manufacturer to see what the connections are and if they can be interfaced with SCART connections. Alternatively, wait ■ while and buy an 'official' PAL Megadrive Contact Virgin Mastertronic on 071-727 8070 for details of availability.

■HELP! Which pack

At the moment I have a Spectrum 128 Plus, the Disciple and a disk drive. I am now thinking ■ upgrading them, as I am more interested ■ a good word processor, and a good database than games. I would be grateful for your opinion. I have set my mind on getting one of two computers: the Amiga Class of the '90s or the Atari 1040STE Business Pack. Which, in your opinion, is the best?

E. Taylor, Seaham, Co.Durham

There's no contest at all. The Amiga wins by a long head.

■HELP! Taking the tablets

I enjoy art on the computer very much. I'm not very good, but that does not matter too much to me, I just enjoy dabbling. I use a Naksha mouse which I find very good but would like to use a stylus because I think I would find it easier to use. So I am now thinking of getting a graphics tablet for my 1Mb Atari STFM.

After a while my hand aches with the mouse, but if I draw with a pen it takes a lot longer. I would also value your opinion on graphics tablets.

Mary Seal, Featherstone, West Yorkshire

The graphics tablet is one alternative to the graphic input problem but many users find that a long time spent gripping the stylus can lead to similar fatigue to mouse use. A simple but effective answer to your problem is the track-ball. This is bit of kit is similar to an upside down mouse with a large ball. You rest the palm of your hand on the device, and move the ball with your fingers. Unlike a mouse, it remains stationary and supports the hand – many users feel that a trackball is more precise than ■ mouse For someone already using a mouse, the track-ball is a cheaper alternative and easier to adjust to than a graphics tablet. Atari itself sells a trackball for the ST priced at £28.99. If you're still interested in graphics tablets, keep tuned into *Express* as we're due to put on our best bibs and scribble ■ bit with some graphics devices.

■HELP! Get me on line

I'm in a dilemma. I've just bought a Prism VTX 5000 modem from ■ classified advert, but it wasn't supplied with any instructions (other than how to access Micronet), and so I don't know how to link my Spectrum to any of the other numerous BBs throughout the country (having checked the baud rate of course). I would also like to know what software I need to access other BBs and viewdata (eg CASHTEL – Maplin Electronics) as to access these was the main reason for sending off for the modem in the first place (apart from the fact that it was virtually free).

James Handley, Barnes, London

The answer is in the software. To get on to scrolling BBs (which most in this country are) you'll need purpose-written software for your VTX. There's a PD title called *Firescroll* which is reckoned to be pretty damn good and one that you can buy called *Dr Scroll* that has a rather elegant X-modem file transfer mode.

You may have problems with some BBs because the VTX5000 has a feature that causes it to wait for anything between 8 and 12 seconds before sending its carrier. Some scanning (multi-speed) boards can't take being ignored for so long and hang up.

- If you're having trouble getting a VTX5000 to work, don't kick the VTX, kick Alan Sugar. When he 'bought the company' and the Spectrum was Amstradised, certain changes to the hardware on the Plus 2A and Plus 3 caused compatibility problems (Thanks, Al!)

Watch this space for the solution.

■HELP! Get me on line

I have had my computer for near on a year, and I think its first class. Now I'm wondering if there is ST, Amiga or BBC emulator software for my Olivetti PC1. If there is, how much does it cost and where can I can get it?

I also need to know about modems and where ■ is possible to get one for my PC.

T.J.Barker, Sheffield

As far as I know, there aren't any emulators that do the job that you require. There is however another way of approaching the problem. You could sell your PC and buy an Amiga A500 and the new PC board for it.This hardware add-on turns the Amiga into a fully-fledged PC. There is a BBC emulator already available for the Amiga that seems to work OK in all but teletext mode where it takes on all the travelling attributes of a mogodon saturated snail.

The only emulators for the PC that spring to mind are the CP/M emulators that allowed a PC to run all the old business software from the 8-bit business machines, and one currently under development that allows a PC to emulate a Spectrum. Other than than, you could always try contacting the PC1 User Group at 68 Queen Elizabeth Drive, Normanton, West Yorkshire WF6 1JF.

■Hint! Amstrad EGA

I noticed in issue 90 that Nial Grimes suggested running games through GEM to get 16 colours on an Amstrad CGA PC.

I suspect he was referring to the Amstrad 1640CD, as this machine is capable of running in a low resolution EGA mode. Rather than running the game through GEM, the line `Display=ega` can be typed in at the MSDos prompt before a game is run. For convenience I included this line in my autoexec.bat file.

I have found that nearly all games can be installed to run in 16 colours: this

works for all the Sierra games, and for most games that have an EGA option.

For those programs that do not like this EGA mode (I have come across extremely few) the line `Display=CGA` can be used to set the Amstrad back ■ CGA mode.

Howard Gray, Kennington, London

Ta very much for the tips. Now if someone could just show me how to get VGA out of my MDA XT ...

■Help! Wacking WACCI

With regard to your article on re-inking printer ribbons in issue 85, I hope that other of your readers had more success than I did in either getting hold of the aerosol or getting ■ reply from WACCI, 9 South Close, Twickenham.

I wrote to them after reading your article asking whether the price quoted by you included p&p and if not, how much extra should I include. Several weeks have now passed without a word from them. This if after including a stamped addressed envelope for their reply. One could assume that the letter was not received by them, but as my letter and the enclosed envelope had my name and address on them, I am sure that the Post Office would have returned my letter by now. I can only assume that the sale of one aerosol does not warrant a reply!

I have tried to contact the firm by phone but Directory Enquiries state that they cannot find a listing as I could only give them the firm's initials and not the full name.

Could you please help me on two more matters?

1) I believe that it is possible ■ transfer files from a Z88 to an Amiga 2000. Do you know ■ ■ firm who could supply a lead and the necessary software?

2) Do you know of a word processor for the Amiga 2000 which allows one to type ■ both English and Russian characters, with both English and Russian words on the same line with WYSIWYG facility.

A. Dale, West Bridgford, Nottingham

I have been round to WACCI and beaten boss Steve Williams senseless with ■ big stick but he denies having received your letter. The price does include P&P and WACCI's phone number is 081-898 1090. You might have ■ speak ■ an answering machine with a strange American accent, so be prepared!

Should you have no joy in persuading the normally very good WACCI to send your tin of black stuff, please let me know and I'll give you Steve's unlisted number so that you can pester him in the middle of the night.

To your questions. 1) Cambridge Computer (manufacturer of the Z88); and 2) I don't know of a UK/USSR word processor (save for the PCW) but if anyone out there does, write in...

■HELP! Display welding

Is it possible to connect my ST to the audio-video terminals on my TV? If so, would this be any cheaper than buying a modulator to do the job?

Peter Burton, Heaton, Bolton

This rather depends on which TV you have and what the connectors are. If your TV has a SCART connector, you're home and dry – there's a lead available that will do the biz. Other configurations that have RGB connections should be possible, but check with the manufacturer for the TV socket pin connections first. Remember, if you have any doubts ■ ■ about compatibility, get an expert to do the job.

A wrongly-soldered lead could ■ your computer, your TV or maybe you...

■HELP! DTP Amiga

I am trying to set up a small DTP business and was wondering what utilities would suit me best.

I have an Amiga (1Mb), ■ second disk drive, a Star LC10 (colour), 1084S monitor and VIDI-Amiga (PAL version). My whole aim ■ to get a small fanzine going, but trying to print IFF screens from the VIDI through *Pro-Write* 3.0 is not proving very successful.

Would you advise to sell the LC-10? My budget is around £1,000, and I already own *DPaint* 3.0, *Pro-Write* 3.0 and *Kind Words*.

A.McCreadie, Tollcross, Glasgow

If you have £1,000 to spend the best place ■ invest is in your output. To look at DTP as a business the least you need is a laser printer capable of producing a page at 300 x 300 dots per inch resolution..

People have scraped by with less, but if you've got the cash, you may as well use it wisely. A look at some of the rubbish that even large companies put out as internal magazines should warn you ■ financially compromising your finished product.

Magazines like *Express* are produced using a Linotronic, and we use the 1,270 x 1,270 dpi setting, but for that sort of quality, you'd need to either mortgage your house or use a lino bureau.

You should be able to pick up ■ cheap laser printer for about £800 so that leaves you with a couple of hundred to play with. About £80 or so will get you a copy ■ *PageSetter* 2.

With the remaining £120, plus the proceeds of the sale of your existing printer, you'll be able ■ buy a screen-grabbing utility for the Amiga get a couple of the latest games and treat the editorial staff of *Express* a (veg) burger.

Failing that, you could save up for a little bit longer and buy the hard drive that you will need when you have to manipulate large quantities of graphic data.

PageSetter and its big brother are supplied by HB Marketing (0753) 686000. You might find your fellow countrymen at Amiga Centre Scotland a useful source of advice and products . Call the centre on 031-557 4242.

■HELP/TIP STFM stuff

I own a Atari 520STFM and I am thinking of upgrading to an STE because of the ease of upgrading its RAM (I have a surface mounted MMU chip in my ST), its stereo sound and its better version of TOS. But I don't know if all of the hardware that I own will be compatible.

So could you please tell me if the following list of hardware is compatible with the STE:

1. Microdeal external clock card.

2. Siren software (Citizen drive mechanism) second disk drive.

3. Pye SCART TV.

I also have some tips for ST users:

1. You can select files from a non-active window in GEM by holding down the right mouse button while selecting with the left mouse button.

2. If you forget to turn on your second drive before you boot up your ST you can still use it without rebooting by selecting two floppy disk drives on the new version of control panel (*Control Panel ++*).

Kevin Gorey, Carshalton, Surrey

Thanks for the tips. The answers to your questions are:

1.No

2.Yes

3. Yes

And there you have it. Two out of three ain't bad as they say in the very old song of the same name ■

■Coupé corner

With the demise of MGT and the rising of SAM Computers Ltd from its ashes, we've put a goodly amount of the Coupe letters through the liquidiser, filtered out the meaningless wibble and have tried to answer some of the questions that were left.

Is it true that the Coupe will be sold off at £50 now that MGT is in receivership and will we be able to use our Spectrum Games on it?

The Coupe prices as quoted by SAM Computers Ltd are:

Basic Model	[illegible]
Coupe with one disk drive	[illegible]
Coupe with two disk drives	[illegible]

The current Spectrum emulator has opened up a good deal more Spectrum software to the Coupe than the first version, but no software emulator can ever do the job of another machine in full. There will always be a few programs (and sod's law dictates that they will be your favourites) that won't run.

I'm thinking of buying a computer and I want to work out which is the cheapest – ST, Amiga or SAM. On the face of it the SAM looks to be cheaper but I haven't been able to work out what they all really cost. I need to use a modem, printer and colour monitor and need at least one floppy.

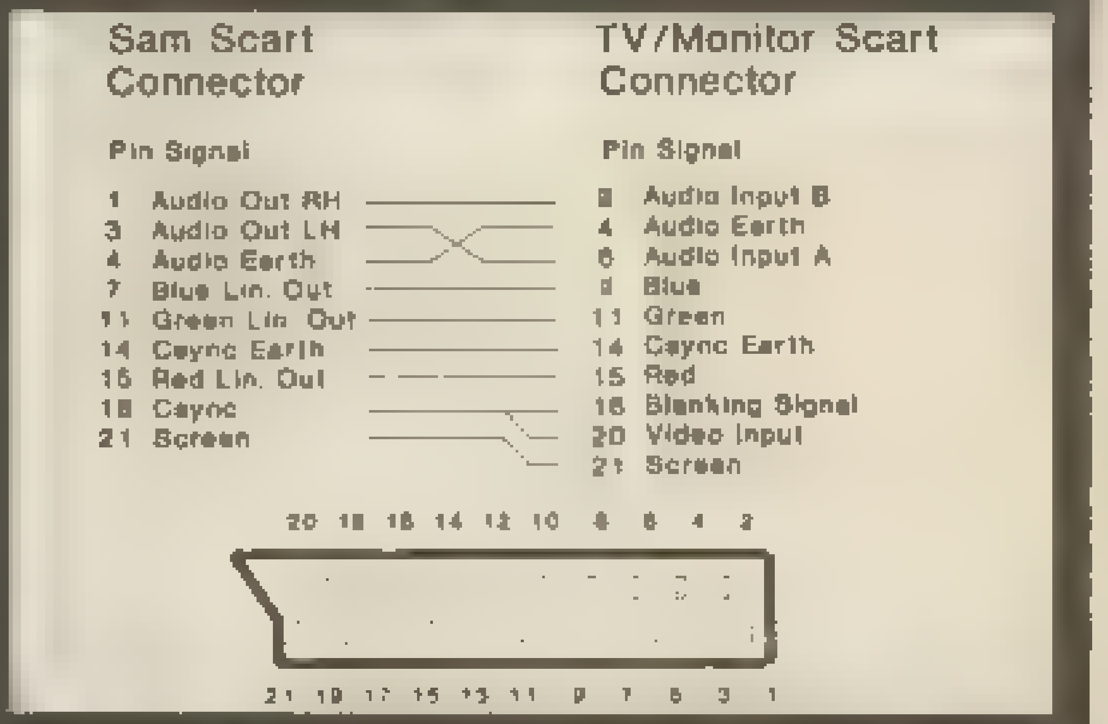
Shop around, or consider buying second-hand if you're on a tight budget. Here are some guide prices for new kit: An STFM with [illegible] costs £2[illegible]. This includes a single disk drive, all the necessary ports and a goodly wadge of software. An Amiga 500 with [illegible] a single drive, software and ports for printer and comms [illegible]. A Coupe with the necessary ports added, a single disk drive, memory upgrade and software costs £34[illegible].

As you can see, the Coupe comes [illegible] midway between the 16-bit competition.

I haven't sent my guarantee registration card back and I've lost it. How can I get the free ROM upgrade that MGT promised and is it easy to fit?

MGT effectively is no more. You can get the ROM upgrade from SAM Computers Ltd for £12 including some goodies to make the purchase less painful. SAM Computers Ltd lives at 7 Clevedon Court, Uplands, Swansea [illegible] 0RG

My SCART lead won't work with the SAM Coupe and my local computer shop can't make me one without the connections. What are they?



These are the pinouts for the SAM SCART lead. Out of a total of five SCART leads in the Express office, two worked with the Coupe and three didn't. So much for the SCART standard!

More next week when I've had time to gut the new SAM technical tabloid for the answers to the hairier questions.

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state [illegible] the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance [illegible] hour response), you can rest assured that your ABC will be fully supported.

The ABC is the latest addition to a comprehensive range of both 286 (8Mhz or 12Mhz) and 386 (16Mhz and 20Mhz) PC's, from the Business Systems Division of Atari Corp. Atari's PC range offers an unsurpassed combination of reliability, compatibility and expandability, with unique features like Atari's 44Mb removable hard disk on their PC4. Return the coupon NOW for further details of the complete range of PC products from Atari's Business Systems Division.

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AVAILABLE: JUNE [illegible]

[illegible] put the ABC even further ahead of the competition we have introduced a special 'Turbo' version, which includes a super fast RLL hard disk controller to increase the data transfer rate from 150KBytes/s to 800KBytes/s, with a performance index of 4.801 Plus! to provide exceptional graphics with an outstanding colour resolution [illegible] up to 1024×768, we have included a Super VGA graphics adaptor and a 14" VGA colour monitor (which also supports 1024×768 resolution), [illegible] for an additional price [illegible] only £300. Check the ABC Turbo against the competition, at only £1299 (+VAT) with 30Mb hard disk, Super VGA colour graphics capabilities, plus [illegible] months on-site maintenance, it offers unbeatable value

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Before you decide when to buy your new Atari ABC, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your ABC, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new ABC products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division [illegible] Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service"

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Seventy copies of Pipe Mania must be won

This week we have a huge number of superb prizes to give away - no less than 70 copies of the acclaimed Empire game *Pipe Mania*. Not only do we have dozens of copies of this well-received game, we have them for every machine under the sun: ST, Amiga, PC, Spectrum, CPC, C64, BBC B, BBC Master and Archimedes.

The game itself is a puzzle-cum-arcade game which has been given a standing ovation by the computer press: its awards include *Amiga Format* Gold, *CU* Screen Star, *ACE* Rated, *C+VG* Hit, *Games Machine* Star Player and *ZZap* Sizzler, to name but a few. But for a really authoritative review, check out what our own Mark Higham had to say in *Express* 75, below.

So how do you get your hands on a copy? Just read through this issue of *Express* (buy it first if you're reading it in Smiths. Yes laddie, I'm talking to you!) and find the word MARIJUANA, which is someware in the magazine. It could be in an advertisement, it could be in in a feature, it could be in the news. Find it and fill in the form and send it to us. No smarrt-alecs saying page 52 please.

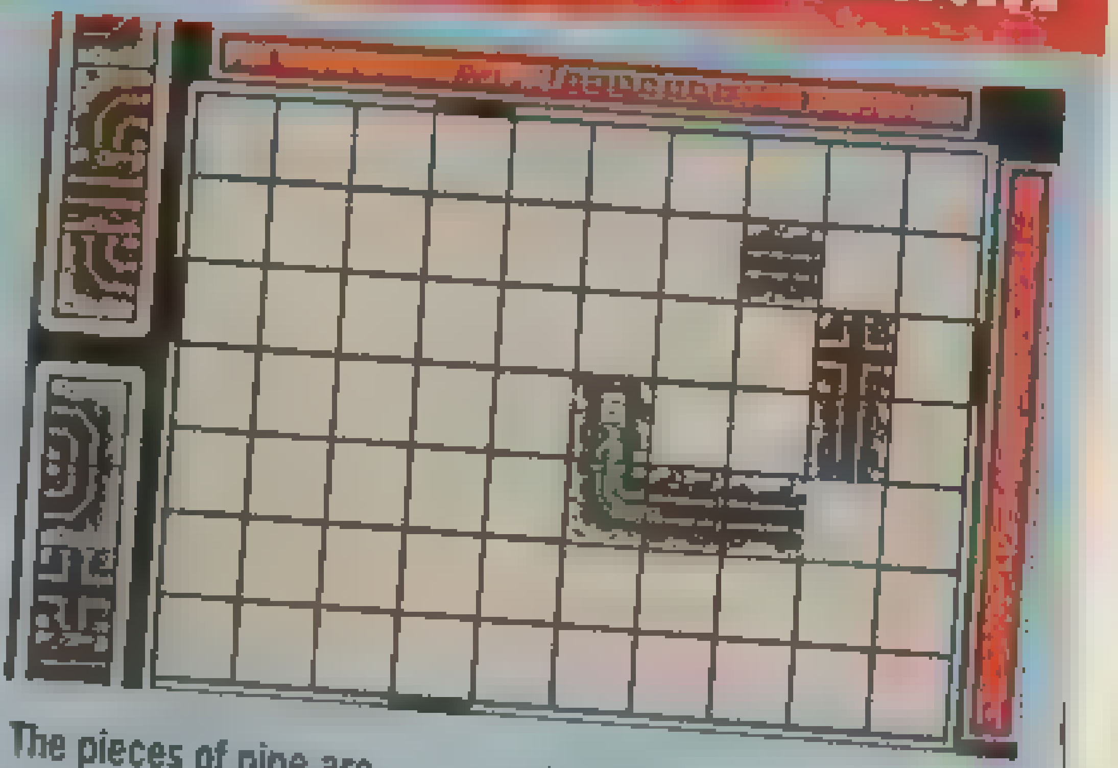
To have a chance we need your entry by August 27, and don't forget to say what machine you own and wheter you want a tape or disk.

The first 70 out of the hat win the prizes. Employees of Future Publishing may not enter and the editor's decision is final.

ST

GAME OF THE WEEK

PIPE MANIA



EMPIRE • £19.99

Once in a while there's a game style which is so fiendishly addictive that it's completely impossible to put down. *Arkanoid* was the last time we saw anything as menacing as this on the ST, but now Empire has come up with *Pipe Mania* which is equally challenging and addictive.

The game started life in the UK just over a year ago, but American-based film company Lucasfilm expressed an interest at the end of last year, made many modifications to the visuals and sound effects before releasing its own version in the States. When you see Lucasfilm's name on the packaging, don't imagine it's a mega-bucks classic.

The objective of *Pipe Mania* is to complete a series of levels by piecing together sections of pipe so that water can flow through. The pieces of pipe are shown down one edge of the playing screen.

These can be straight lengths, left or right bends or crossroads. Each piece drops down a shute, appearing at the bottom. The playing screen is made of squares and you must place that bottom piece somewhere on the screen.

You have a limited amount of time to link all the pieces before the water starts flowing. You can continue to position pieces of pipe until the water reaches the end of your pipeline. If you've placed enough pieces, you then advance to the next level.

As the game proceeds, extra pieces of pipe are tossed in to make things harder. One-way sections have an arrow over the top and must be positioned carefully so that water flows in the direction of the arrow.

There are also reservoirs and restricted pipes laid on the playing screen. If you build these into your pipeline you receive extra points and the flow of water is slowed down, giving you longer time to lay new pieces.

[illegible] game has been released this year which can equal *Pipe Mania* for addictiveness. The game might sound hopelessly silly and admittedly it has no depth to it whatsoever, but once you start playing, you won't be able to put it down.

[illegible]

NAME ....

ADDRESS ....

....

....

MACHINE: **PC** ☐ **ST** ☐ **AMIGA** ☐ **CPC** ☐ **SPECTRUM** ☐ **C64** ☐ **BBC B** ☐ **BBC MASTER** ☐ **ARCHIMEDES** ☐

FORMAT: **3-inch disk** ☐ **5.35-inch disk** ☐ **3.5-inch disk** ☐ **cassette** ☐

The page containing the word MARIJUANA is number ....

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ATARI Portfolio

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The new Portfolio from Atari is the world's first pocket-sized electronic organiser that is also a powerful PC compatible computer, with a full QWERTY keyboard and scrolling 80×25 character display.

Portfolio includes everything you would expect from an electronic organiser - an address and telephone book, time manager, diary and sophisticated calculator.

Portfolio also includes several functions that you would not expect - a spreadsheet for your personal budget and expense records, as well as a text processor for typing memos and letters.

And, because Atari's Portfolio is PC compatible, it can communicate with your desktop PC at home, or in the office. You can transfer files from one to the other, to enable you to update your reports and figures with the Portfolio while you are on the move.

FOR ONLY **£249** INC VAT

SPECIFICATION

- *Processor:* Intel 80C88 at 4.9152Mhz.
- *Operating System:* Compatible with MS-DOS 2.11.
- *Internal ROM:* 256K containing BIOS, operating system and applications suite.
- *RAM:* 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- *Keyboard:* [illegible] keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- *Character Set:* Extended IBM ASCII (255 characters).
- *Mass storage:* credit card sized memory cards (32K or 64K or 128K RAM).
- *Display:* Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- *Peripherals:* 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- *Size:* 8" x 4" x 1" (200mm x 105mm x 29mm).
- *Weight:* 495 grammes (with batteries).
- *Applications:* calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And [illegible] doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

TIME MANAGER

More than just an electronic diary, the Portfolio Time Manager enables you [illegible] plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you [illegible] important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial, power and root calculations, all with multi display formats and memories.

ADDRESS BOOK & DIALLER

Portfolio has a complete address book facility that allows you [illegible] store hundreds of addresses and phone numbers. And, [illegible] the touch [illegible] a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready [illegible] book your table, hold your Portfolio to your telephone mouthpiece and use its special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

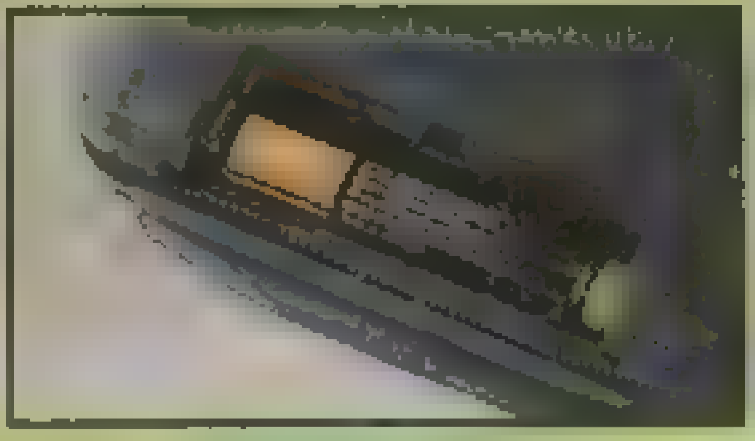
The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns [illegible] 225 rows and reads/writes Lotus V1.0 and V2.[illegible] files, so you can transfer data [illegible] and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.



POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.

INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range [illegible] peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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PAYMENT: By cash, cheque and all major credit cards.
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Before you decide when to buy your new Atari Portfolio, we suggest you think very carefully about WHERE you buy it. Consider what [illegible] will be like a few months after buying your Portfolio, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new Portfolio products? At Silica Systems, we ensure that you will have nothing [illegible] worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim [illegible] meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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CHEQUED MATES

Chess was one of the first games to come to the computer, and it is regarded as a benchmark of artificial intelligence. Tim Smith finds out just how clever chess programs really are...

ROLL OUT THE BIG GUNS

Although out of the price range of most of us, the following classic machines are all part of the computer's long history in chess:

TUROCHAMP AND MACHIAVELLI: Alan Turing, a name which mists the eye of most computer buffs due ■ his brilliant mathematical brain and the fact that he has become known as the father of the modern computer, came up with Turochamp and Machiavelli in 1949. Neither were computers in the machine sense, but both were sets ■ computing instructions. Unhappily, like Turing, they were great in logic but weak on the game ■ chess itself.

MANIAC: 1956 saw the scientists at Los Alamos bored with creating hydrogen bombs and turning their attention to chess. It was an IBM-based machine, set up to play without bishops. MANIAC's main claim to fame is that it was the first true computer ever ■ beat a human player – albeit one who had just learnt to play the game.

MAC HACK VI: Now here was a computer which liked to socialise. To this end, it was the first to enter a tournament. Programmed at MIT (The Massachusetts Institute of Technology), it got one draw out of five games in the 1967 tournament. Two points are of interest about MAC HACK; firstly, it was quite capable of making queen sacrifices in order to win. Secondly, it gave the eccentric but brilliant Bobby Fischer his last published game. MAC HACK lost.

TECH II: A run-of-the-mill dedicated machine which claims a place in chess and computer history by doing what computers do well – it crashed while playing another machine called RIBBIT in the 1974 US Computer Championship. Not a major event in itself until you consider that TECH II had over half an hour left ■ play and had a simple mate in two.

CHAOS: A fine figure ■ a machine. CHAOS is said to ■ the first computer to make a tactical positional sacrifice in a game. That piece of strategy sent shivers through every master and grand master who has ever mocked the computer's role in the game. It also lifted the heart of people working in AI (artificial intelligence).

CHESS 4.6: This one sent more than shivers up grand masters' spines; it actually beat one. Although playing a blitz game (a much faster game than conventional tournament chess) which is much preferred by programmers, grand master Michael Stein was roundly beaten and resigned ■ move 38.

CRAY BLITZ: Not surprisingly, because ■ runs on a Cray super-computer, this ■ one of the quickest and chess computers yet to play.

TOCUM: This machine has yet to ■ invented but is thought to contain the following functions; board wiping arms which become active when in a losing position, legs to kick opponents beneath the table and a 'can I have that move again .. oh go on' sub-routine.

Finally, it will have a special built-in smug routine when playing weaker opponents.

HOW THE SOFTWARE FARED

It should be born in mind that no two programs are alike. Some come with infinite move systems which require the human partner [illegible] stop the machine and force its hand, or should that be chip? Others have blindfold options, blitz options, matching options – in which your move time is matched. In fact as each software house attempts [illegible] out-chess the other, more and more options are included.

Look at *Battle Chess* for example. Basically, this plays an average (in computer terms) game, but the graphics are outstanding; rooks turn into rock men as they move across the terrain, queens seem to cast spells. For a gimmick it is a good one. Although it can be frustrating for the real chess freak to have to watch the lengthy animation, the learner could do a great deal worse than to discover the joy of chess via this game.

Moving onto the less gimmicky games we have *Chessmaster 2100*. This game is sold as coming from the Fidelity range; not the cheap stereos Fidelity but the range [illegible] computer hardware which includes such classics as Par Excellence, a computer which beats players with an Elo rating of 2,072 and upwards (in other words, strong).

Chessmaster 2100 on the Macintosh or PC is quite capable of thrashing the average club player on nearly any of its many levels, and there are loads of these. When put up against Cyrus II – set on level 9 (3 minutes and 30 seconds per move) – on the PCW, *Chessmaster* won easily, and even beat Cyrus on [illegible] infinite level when the PCW was made to move after every 10 minutes. Against *Chess Champion 2175* which was set to tournament mode on an Amiga, a brain-blasting draw was played.

Chess Champion 2175 itself plays a better than average game. It purports to have a rating [illegible] over 2,000, it also comes with a huge set of booked opening moves – a 300,000 byte library to be exact. Its levels [illegible] play range from beginner through [illegible] problem solver and it can assess your rating via [illegible] series of timed set moves.

Probably the best known, though not the strongest, game for the computer is *Colossus Chess*. This [illegible] now up to version 10 on the Amiga and ST – there is a version for the PCW and CPC but only up to version 4. The Amiga and ST versions are ideal for the beginner or [illegible] average player. Like most games nowadays, *Colossus* comes with a 3D display as well as the standard (and easier [illegible] play) 2D board. [illegible] also has tilt and rotate. You can keep a book of [illegible] to 65,000 moves as well as allowing the machine to learn. When pitted against *Chess Champion* the game was close, but *Colossus* appears a little weak in its endgame. This should not detract from the program however because most humans would find its middle game a pig to handle successfully.

Chessmaster 2100: PC, Mac: Software Toolworks: £29.95
Cyrus II Chess: PCW, CPC: Amsoft: £19.99
Chess Champion 2175: Amiga, PC, ST: Oxford Softworks: £29.95
Colossus Chess: CDS: Amiga, ST: £16.99; CPC, PCW: £10.99
Battle Chess: Amiga, ST: Electronic Arts: £24.99

The year 1769 saw the invention of the first chess playing machine. Called the Turk, the automaton toured Europe with its owner (Johan Nepomuk Maelzel – the inventor of the metronome). Ben Franklin played the Turk at the Café de Regence in Paris and lost. Napoleon played and cheated, and Edgar Allen Poe guessed correctly that the Turk contained a small man who actually played the moves.

In 1868 a machine called Ajeeb began its tour of the world. Again a cheat, it played Teddy Roosevelt, Harry Houdini, John Ruskin, Sarah Bernhardt and Prince Edward (later Edward VII).

Both machine were cheats. What does this prove? It proves two things. Firstly, that chess has had a history in the world of the 'machine', and secondly that people do not feel that playing a machine [illegible] chess is an 'unnatural' thing or that it detracts from the game.

The argument has long been thrown at chess playing computers, even by people who live breath and eat hex, that chess is a social game, [illegible] trial of skill, even an international language and to mar it by mechanisation is a profanity.

The argument is backed up by the fact that no reigning world champion has ever been beaten by [illegible] computer. But, on the more earthy level, how many of us have ever, or will ever get to play a Kasparov, Karpov, Alekhine or Capablanca even once, let alone every day? How are the poor mortals who have no access to masters, grand masters or even good club players ever to improve our games? Easy, we get hold of one the many excellent chess packages available on the market.

Basically, name any home computer and you can also name a chess game to go with it. None of these packages would worry a world champion or grand master too much. However, the average player and more especially the learner, could find few better or more patient opponents than their own computers.

Many of the public domain (PD) games available which don't use graphics give a good game if you can be bothered to move for both yourself and your machine using a conventional board.

Luckily as well, chess is one of the easiest games for the computer to emulate adequately, but one of the most difficult for it to emulate badly. This means that there will [illegible] little if anything to differentiate the computer chess games you can get for your Amiga, PC, PCW, ST, CPC and so on. It also implies two things; firstly that no one computer is 'better' than another, and secondly that if you learn your chess from a C64 you will be in as good hands as if you had learnt it from an Archimedes.

IT'S A STRATEGY

How do computers play chess? They, or the software which runs on them, make use of 'decision trees' and strategy bases. The two basic computer chess strategies were developed by Claude Elwood Shannon in the 1940s and 50s. Both are based on the ground rules layed down by Jon Van Neuman. The two strategies are exotically known as the Brute Force Method and the Plausible Move Generator. They are known in the more crusty computing and chess circles as A and B.

A runs as follows; given [illegible] set number of moves ahead, the computer simply examines the possibilities for every move and reply. The heuristic method of [illegible] used to cut down on the number of moves and half moves (moves which are plausible in a future situation but not effective during the current move) played. The heuristic method can reasonably be translated into 'trial and error' learning.

[illegible] again makes use of the heuristic method, but this time in the guise of a plausible move generator. Again, in real terms, this means that the computer looks at fewer moves [illegible] each stage and is therefore capable of examining more half-moves ahead. What this means to most of us is that the computer requires less processing power (it carries out few whole calculations) while playing a strong game. ■

HOW TO BE INCREDIBLY WELL VERSED IN TWO MINUTES

One down side to chess is the chess bore. This is the person who leans across the board and sighs in a patronising manner when you move a bishop into direct line of their queen. There is no escaping the chess bore, so try beating them. Drop the following phrases and names into conversation, crush their confidence and enjoy your game.

NAMES

Tal: a chess lunatic who would attack more often than a great white shark with a headache, use to take great joy in using his king as an offensive piece.

Capablanca AKA Capa: Generally accepted as being the greatest. A useful phrase when lulling an opponent into a false sense of security tempered by awe at your chess knowledge is 'That move would have capped Capa.'

Vera Menchik-Steveson: Russian born, played for England. She had a rating estimated at 2,750. She also quite easily disproves the theory that women can't play the game.

• *Capa – great for name dropping.*

TERMS

En Passant: as in 'Of course you do play *en passant*'. Most people in the pub will say no. If they say yes then simply say, 'Oh I can't be bothered with it, it stifles the Reti-Zukertort opening don't you feel?'

En Prix: The female equivalent of 'check'. It means 'your queen is in danger of being nabbed.' Make sure you use it because it means as an honour principle that your opponent has to as well and leaves this you free to stop worrying about losing a queen stupidly.

OPENINGS

You don't need to know how to play them, just drop them in to the conversation, a final tip is that you can always use Declined or Accepted as suffixes to extend the names:

Grunfeld Defence, Proto Indian Defence, Benoni Counter-Gambit, Anti-Meran Gambit, Caro-Khan Defence.

There are hundreds more to be quoted. Try laying hands on Irving Chernev's *The Most Instructive Games of Chess Ever Played*, published by Faber and Faber.

• *Vera Menchik-Steveson: women can play*

EXPRESS MAiL

Write and tell us what you think about anything under the Sun! Reach us at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE, as we're too busy writing the magazine. Replies this week by Keith Pomfret.

Another free advert

No magazine is perfect, everyone has their own tastes, but the staff at *New Computer Express* are to be congratulated in their efforts to please everyone. Keep up the good work!

Turbo and Fastline have had their plugs, would you be so kind to print ours? We are Contact Public Domain. We have a staggering seven disks now available for the SAM, each with 8-10 programs on them. Disks 1, 2, 3, and 5 contain mainly graphical demos and a couple of games. Disk 4 is full of utilities, a unerase program, desktop disk manager and the like, Disk 6 is a gallery disk containing 31 screens. Disks 1-6 cost £1.30 except Disk 4 which is £1.40 (with instruction sheets). We also have an applications disk, three mini word processors and an Atari ST text file converter (not PD). The applications disk *Word Choice* costs £2.50.

Contact SAM Coupé User Group, 10 Ricardo Road, Old Windsor, Berkshire.

We've done a deal with an electrical supplier for a big box of plugs. If any user group wants one in future, they're available at the knock-down price of £1 plus P&P. This will avoid us having to use the letters page for blatant advertising and clear the way for a few letters...

Mr Angry I

I was absolutely disgusted to read a letter in issue 91 from a certain Harvey Kennet. This man's narrow-mindedness is unbelievable!

Firstly Mr Kennet (as it seems you prefer the formal approach), why the hell do you insist on comparing cars to computers? Talk about chalk and cheese!

Secondly I would suggest you put your brain into gear before you put pen to paper; first you tell us that 8-bits suck, and then you inform us that the ST and Amiga are pieces of junk! It will be a couple of years before the 32-bit machines take a firm grip of the market, and even then the prices will be quite substantial. For the time being the ST and Amiga are the way forward.

Finally how can you say the 8-bit machines are holding us back from newer advances? If we'd all rushed out and bought 16-bit machines, would the CD-Amiga have appeared sooner?

Andrew Roberts, St. Helens, Merseyside.

Mr Angry II

I have just read Harvey Kennet's letter about 8-bit machines and 8-bit owners.

My reason for not getting a 16-bit machine is that I don't want one, because I have only seen four programs for my brother's STE (two flight sims, an art package and *Laser Squad*) which impressed me. As far as I'm concerned this is not reason enough to justify my purchase of a 16-bit machine.

As for Mr Kennet's argument that 8-bit owners are holding up the advance of technology, he seems to ignore the fact that most technological advances are either a direct result of military research programs, or, to a certain extent, the result of advances in space technology.

He also ignores the fact that by the time that technological advance filters down to the home computer level the main producers will only sell and produce 'advanced' machines if they are cheap to produce and prove to be profitable. It has nothing to do with burgeoning 'Luddism', as Mr Kennet would have us believe.

Dominic Corby, Chelmsford, Essex.

Mr Angry III

Responding to Harvey Kennet's letter in *Express* 91, there are several points I would like to put to him in defence of 8-bit machines.

About three years ago I bought a Spectrum 128 Plus 2. I had never programmed a computer before in my life, yet within a week found myself writing my own programs in BASIC, and after a month or two started learning machine code. I wonder how long it would have taken me to gain mastery of a 16-bit machine?

If I need to customise or de-bug any bought software, I now at least stand a chance of success. How would I fare on an Amiga or ST, let alone a 32-bit monster, and how much longer would it all take?

Technology for technology's sake is clearly not always the answer, and can often just be the excuse for computer snobbery.

Miles Kinloch, Edinburgh.

Mr Angry IV

Since Mr Kennet uses the car analogy to compare computers, let me remind him that there are plenty of ordinary 1950s American production saloon cars which can still equal the acceleration of today's Porsches, Ferraris, Jags, etc. for a fraction of the price. They can do it, of course, by engine size and sheer brute force, not by sophisticated engineering.

The only people who need (as distinct from want) blistering speed and gigantic memory are the Government, the military, banks, airlines, hotels and so on, all of whom would soon be out of business using anything else.

Although I've many faster, more powerful computers I am perfectly happy, (like 1.5 million others) with my trusty old PCW and I know plenty of businesses that still retain their 8-bits as back-ups for the same reason that I do – simply because they are so reliable.

Mr Kennet also seems unaware that even 8-bits don't stand still, but are constantly being improved – just look at the add-ons for the PCW.

Hang on to your 8-bits, folks, they are tomorrow's antiques!

Neil Foster, Prescot, Merseyside.

Harvey Kennet seems to have stirred up the 8-bitters out there and rankled some of the 16-bitters too. We're tempted to ask Mr Angry IV which 1950s American saloon would blow off a Testarossa, but won't. Anyway, Keith's 8-bit bubble car will beat them both when it comes to parking. If we are to carry on using cars as a comparison, does that mean that a driving school car with dual controls is a parallel processing transporter?

CD-ROOM?

I have seen in various magazines alternative suggestions to the rather expensive disk storage boxes that are available for 3-inch disks. The cheapest method suggested to date has been the filecard box from W H Smith at around £4. Cheapest that is until now.

I have just discovered that using a plastic case marketed by Eros Products as a CD container one can safely store around 40 uncased CF2s. Where the CDs are meant to be stored in two rows of six, the CF2s are stored along the length of the case. Price? £1.99!! The discount stationery stores tend to sell them.

I've bought two of these cases, which also feature a useful carrying handle. Although they aren't lockable, I think they represent the most economical method of disk storage around (apart from the old cornflakes boxes, of course). The main disadvantage is that they're not available in nice pastel shades of lemon and apple white.

Phillip Cole, Rotherham, South Yorkshire.

We are grateful for the handy hint but the editor of our sister magazine *Classic CD* is organising a vigilante hit squad to trek up to the wastelands of the South Riding and duff you up.

Since your letter arrived, his CD boxes have been mysteriously vanishing, only to reappear in *Express*'s editorial boudoir after getting a coat of Dulux pastel. We've offered some lockable floppy boxes to *Classic CD* but they don't go for the idea of such cross-fertilisation with their computing cousins.

My beautiful CPC...

After reading a letter from Stuart Smith in issue 90 I was shocked to see the CPC being slagged off by a Commodore 64 owner. The CPC is the most superior machine out of the 8-bit computers *(with the least literate owners it seems – Ed)* it has better graphics, sound and colour than C64. When I look into a computer magazine such as the *C+VG* and see a review for a game on the CPC and C64, the photo for the CPC has much clearer graphics, and is much more colourful than the C64 version of higher rating.

As for going into Dixons and seeing C64s and Spectrums instead of CPCs, doesn't Stuart Smith know that Dixons have recently taken the CPCs off their shelves? I'm sure he does or he wouldn't have used Dixons as an example. If he wants to see the CPC he should go to a computer shop not an electrical retailer.

Finally I think the C64 is overrated.

Every popular computing magazine I look in has loads of reviews for the C64 and the CPC has hardly any. I hope this letter will inspire more CPC users to write in and speak up.
M Thomason, Birmingham.

You get this week's award for narrow-mindedness with malice aforethought. Both machines are fine or they wouldn't have sold millions. From now on, any 'my machine is better than your machine' letters will be gratuitously chopped.

Seeing as everyone else is getting plugs on these pages, we'll use this opportunity to mention the imminent arrival of *Commodore Format* – a new magazine dedicated to the C64 and C64 consoles that arrives with a free cassette game on the cover each month. Yes, you've guessed it, the new *Format* is a Future magazine. Look out for it in your newsagent's on 20th September.

■ A lawbreaker writes

How I laughed when I read your reply to Sean of Derbyshire. If he'd had the guts to send his name and address in, you would have squealed on him. Or I think you should have done...

Why don't you stop the next lorry, car or bus you see speeding and tell the driver you are going to report him? Or don't you have the guts? Why don't you just report them anyway? Why don't you make a citizen's arrest?

Have you ever video taped a programme off the TV and kept it? You're breaking the law. Are you going to report yourself? Do you know someone who has? Did you report them?

Have you bought a record, CD or tape and made a backup for the car? Or a compilation of your favourite songs? If you have, you're breaking the law. Did you turn yourself in? You didn't have the guts did you? We all break the law.

Yes even the "holier than thou and we all smell of rose petals *Express* staff."

I know for a fact that you stole sticky tape. Have you the guts to tell the boss? What about that pen that got taken home, is that not theft?

Did you accept that free dinner at Christmas from that software firm? You shouldn't have, can you not see it's a bribe?

What happens to the games you review, do you take them home, swap them with friends, sell them cheap? If you were honest you'd send them back, but you're not are you?

That pound coin you found, I didn't see you rush to hand it into the police. Why not? Don't you realise you stole it?

It is wrong to copy copyrighted software, but a lot of things are wrong also. It doesn't matter if you steel a penny or a hundred games – it's all theft.

Slag this off and make 'funny' comments about this in your rag, but the readers know I'm right. Of course the Moral Minority will rally to your defence, but that is why they are the minority.
P. Floyd

You're perfectly right about everything except the rose petals. The proximity of a pub selling Frogwarts Old Destructible makes that an impossibility. I'm sure that there isn't a person in the UK, never mind *Express*, that is totally squeaky clean, but we try.

The difference between all the examples you cite and software piracy is that with piracy the programmers lose, and therefore so do we all when they give up programming to do something more profitable.

Oh, and the phrase is 'Moral *Majority*', by the way.

■ Another free advert

Thanks for publicising the *SAM Coupé Newsletter*. There was a very big response, and people are already beginning to return subscription forms.In each newsletter there is software, book reviews, competitions, our own software, and loads more.
Ron Stirling, 23 Mayfield Street, Glasgow, G20 9RQ.

Now that we've publicised it, what about sending us a copy for the files? And that goes for any independent newletter publishers out there – let us know what you're up to by sending copies of your publication to Keith Pomfret.

■ Computer care

Having just read the letter from the 'stricken Amiga owner', (*Express* 90), I find it hard to understand how anyone can treat a complex microcomputer with the same respect usually reserved for children's toys. He put a bottle of pop on top of his new monitor! Put the Amiga on the floor behind the wheels of a car! Words fail me, though speaking as an ST owner maybe it's not such a bad idea!

Seriously though, as much as I feel sorry for Mr Chandler, none of this was 'misfortune' all of it was carelessness and could have easily be prevented. How about a quick column on care and maintenance?

Meanwhile, a handy tip – while playing your favourite game during dinner, notice how the disk drive makes a great biscuit holder!
Kevin Winch, Uplands, Swansea.

A column on the best all-risks computer insurance policy to buy might be more use. But have you ever tried to format a double-sided double-density Hobnob?

■ Soap box user...

Consoles are computers. If they have a processor (and some have extremely good ones too) they are computers and can be programmed – otherwise, where do the games come from?

To Jonathan Tranter and the person who wrote the reply to his letter "Take it Seriously", including Commodore in the list of games machine manufacturers was not exactly accurate. The Pet C64, A1000 and Plus were all marketed as business machines originally. The A2000 and PC ranges are aimed at the business market and the A3000 is aimed at the graphics workstation market. Hardly a 'games machine manufacturer".
Jezz, Bigtime Software.

Bet you feel better now you've got that lot off your chest. ■

FROM The ARCHIVE

ONE YEAR AGO

EVENIN' ALL
Police warned that over 40 per cent of second-hand micros could be stolen, and put on show a £300,000 haul of computer equipment retrieved when two men in their 20s were arrested. Detective Sergeant Iain Farquar told *Express*: "If you buy a second-hand computer, you have a nearly fifty per cent chance of it being stolen."

OLYMPIC GAMES
The world's first computer Olympiad got under way with computer versions of chess, draughts, Connect Four, Go muku, backgammon and dominoes battling one another and humans in a contest to decide who – or what – was the ultimate player of games.

World champion chess program *Mephisto* wasn't satisfied with electronic opponents and went on to be the first computer program to thrash a human world champion.

GREASY POLL
Top pollsters Gallup blamed the laziness of some compiling dealers for inaccuracies in the computer software charts. Gallup claimed that only about a quarter of the 200 dealers were regularly making their returns. Now Gallup installs computer tills.

CYBER-MEDICO
Cyber scientists at Mitsubishi developed a computer that could recognise all 26 letters of the Roman alphabet however badly they were written. The optical neurocomputer was heralded as the next step toward real artificial intelligence. One year later a pharmacist confirmed to *Express* that they still hadn't been offered the computer to assist with deciphering GP's handwriting.

KID'S STUFF
The Bethnal Green Museum of Childhood opened a month-long exhibition that had kids queueing up to grapple with the Amigas and Archimedes in the computer dungeon. To add a touch of levity, Sega games consoles were on display and as many as 1,500 kids a day waggled joysticks, dragged mice and pounded keyboards for the duration of the exhibition.

LEGAL, HONEST, DECENT AND TRUTHFUL
The Advertising Standards Authority climbed on to its shining charger for its regular joust with the computer industry. Tournament fodder on this occasion was Camelot Computing, *Commodore Disk User*, Inmac and Commodore.

Wrists were smacked for advertising products that weren't available, something for which they are still being smacked...

SPARE A DIME
Commodore lost $10 million in the three months from April to June, but didn't seem overly concerned by the loss as the Christmas season was by then looming

A FIRM CALLED SUE
Litigious console company Nintendo bared its legal teeth at Newark firm Blockbuster for allegedly photocopying the instructions of Nintendo games used for rental.

SAY THAT AGAIN
Quote of the week came from Bernadette Tynan, former girlfriend of boffin Sir Clive Sinclair. The demure lady said: "We didn't sit at home discussing egghead problems. We had a zest for life."

And a passion for squidgy keys?

TWO YEARS AGO

HOW COULD WE BE SO WRONG?
Rumours abounded about the new Amstrad 'Sinclair' PC games machine, which would be:

- £299 including a colour monitor
- A CPC lookalike
- A portable
- A 68000 machine
- A Spectrum compatible PC
- A dual processor 68000/8086 mega games engine

What a pity that all the pundits got it wrong and the much-trumpeted machine turned out to be:

- A lemon.

READ ALL ABOUT IT
Still on rumours, the publishing world was buzzing with talk of a new computer magazine. What was it to be called? Who was going to publish it?

Look at the cover– you're reading it.

IF THE MOUNTAIN WON'T COME...
Commodore went hunting for some of Acorn's educational market by announcing a BBC emulator for the Amiga. Two years on and Commodore are still chasing the elusive educational niche with its recent Amiga Class of the '90s bundle. Will they ever use Amigas to learn?

COMPUTER CHAOS

This week's selection of electronic disasters, selected from the overflowing records of cock-up collector Mel Croucher

ROTTERDAM, HOLLAND

A group of Dutch smallholders dream up a self-sufficiency plan for their favourite crop, and devise a computer-controlled marijuana farm in the urban wasteland of Rotterdam. The dope production is located in a tenement flat, overseen by automatic artificial sunlight and a computerised rainfall/drainage system. The drug squad busts the enterprise when the control computer fails, and a couple of surprised pensioners in the downstairs flat receive a ceiling shower which floods them out.
(*The Observer*)

LOS ANGELES, USA

The Pacific Bell telephone company operates the Los Angeles '911' emergency system, with an installation price tag of $1.6 million. Back-up units form an integral part of all vital components. The system suffers continual overload glitches and proceeds to blow its brains out twice in one day, grinding emergency services to a halt. Pacific Bell service manager Michael Fink confirms that the problem is due to a faulty low-cost power converter board. "It's the only part of the system without a back-up, and is so reliable and simple that no backup is designed..."
(*Los Angeles Times*)

TRIPOLI, LIBYA

The Pentagon orders the US Air Force to scramble from English bases and nip over to bomb Colonel Gadaffi in reprisal for a non-Libyan bombing a West German nightclub. Gadaffi survives, but the USAF does manage to hit one of his daughters, a schoolyard, a hospital, several domestic dwellings, the French Embassy and the Japanese Legation. A $35 million investigation is immediately launched to identify the source of the anti-aircraft electronic blizzard responsible for numerous computer cock-ups, maverick missiles, one crashed F-111, two dead American airmen and seven aborted missions during the raid.

The probe is spearheaded by Air Force Colonel Charles Quisenberry, and his conclusion is as follows: "We have identified the source of electronic interference. The end result was we found out we did it to ourselves."
(*Seattle Times*)

TORONTO, CANADA

The first election to be tallied by computer gets under way. Ballots are counted by machine using optical recognition techniques, but many are spewed out because Toronto law states that any recount must use the same methods as the original count. Catch 22.
(*Toronto Star*)

NEXT WEEK

MORE THAN A BLEEP
Ways and means to get decent sound from a PC

PRO-24
Could this be the ultimate Amiga sequencer?

ST ON AN AMIGA
We test the add-on which claims to make ST software run on an Amiga

PLUS

- Shopping Express bargains
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A500 BATMAN PACK

Commodore
AMIGA 500
BATMAN PACK

The Commodore A500 Batman Pack must surely rank as one of the most popular computer packs ever! The pack features the **Commodore Amiga 500 computer** with **mouse controller** and **TV modulator**, plus four top software titles. The software includes: '**Batman The Movie**' - Rid Gotham City of the cunning joker, in Ocean's top selling title based on the blockbuster Batman film; **New Zealand Story** - high quality conversion of the leading arcade game; **Interceptor** - Dogfight with two F-16's in this leading flight simulator; **Deluxe Paint II** - top quality Amiga graphics package which set the standard for others to follow. Return the coupon for further details.

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AMIGA 2000

For the more serious or professional applications user, Commodore have a selection of systems based around the expandable Amiga 2000, at prices from £1295+VAT. The A2000 features a full 1Mb RAM (expandable to 9Mb), 9 system expansion slots, plus IBM compatibility with the use of PC-XT or PC-AT bridgeboards. Complete and return the coupon, putting a tick in the A2000 box, for details of A2000 computer systems.

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Here's something completely different - a science fiction story with comic book style graphics. Our heroes Jake and Duke are on the Planet X rescuing Humans who have been captured by the Robot Monsters and forced to create an evil Robot Army to DESTROY EARTH! Jake and Duke fight their way through hordes of evil Robots to help the Humans escape.

RAINBOW ISLANDS:

Slip on your magic shoes, practise throwing a rainbow and you're ready to go island hopping. From the Island of Doh to Monster Island, you will encounter Doh himself, slinging insects, lethal combat machines, mechanical assailants, the formidable beings of legend and folklore. Finally enter the world of darkness and its inhabitants.

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